THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
The Railway Engineer · TRANSPORT · The Railway News
The Railway Times · Herapath's Railway Journal · RAILWAY RECORD.
RAILWAYS ILLUSTRATED · ESTABLISHED 1835 · The Railway Official Gazette

PUBLISHED EVERY FRIDAY
AT
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRAZETTE, PARL., LONDON"
Telephone No.: WHITEHALL 9233 (6 lines)

Annual subscription payable in advance and postage free
British Isles and Abroad.....£2 5s. 0d.
Single Copies.....One Shilling
Registered at the General Post Office, London, as a Newspaper

VOL. 68. No. 8 FRIDAY, FEBRUARY 25, 1938

CONTENTS

	PAGE
Editorials	345
Letters to the Editor	351
Publications Received	353
The Scrap Heap	354
Overseas Railway Affairs	355
The Railroads "Forgotten Man"	357
Welded Bogies for New L.P.T.B. Stock	358
Traffic Research, G.W.R.	359
Considerations on the Work of the Signal Engineer	361
The Metallurgy of a High-Speed Locomotive—II	366
New Four-Cylinder 2-8-4 Locomotives for Norway	371
Machining Horn Gaps in Locomotive Frames	372
Railway News Section	375

Lord Horne on New G.W.R. Works

PROBABLY the two statements of widest general interest which were included in the admirably lucid statement made to the shareholders of the G.W.R. by Lord Horne on Wednesday, were those concerned with new works. On the one hand he pointed out that the rapid rise in the price of materials in the early part of 1937 made it necessary to reconsider some of the schemes included in the large programme of new works covered by the financial arrangements entered into with the Government in November, 1935. Independently of the question of cost, however, Lord Horne said that he and his colleagues had concluded that owing to the general improvement of trade conditions and the decision of the Government to embark upon an extensive re-armament programme, the national interests would be served better by deferring to slacker times such of the schemes as were designed solely to meet future requirements, and were not necessary for immediate needs. In this category he instanced the Dawlish deviation line, the new St. Germans to Looe railway, and the reconstruction of Exeter, Oxford, Llanelly, and Weymouth stations. The aggregate cost (including certain minor proposals) was between two and half and three million pounds. On the other hand, Lord Horne explained that the upward trend of coal prices had so greatly increased the cost of operating steam locomotives that it was incumbent upon them to explore the possibility of effecting economies by substituting other forms of traction. He explained that the scheme which Messrs. Merz & McLellan had been invited to prepare—as already announced—embraced the section of the line between Taunton and Penzance, and added that this section was undoubtedly the most suitable for the immediate purpose of the G.W.R., as it readily lent itself to further extensions if the experiment proved successful.

* * * *

Points from the G.W.R. Meeting

Lord Horne prefaced his review of what he described as "the best year experienced by the company since 1930," with a reference to the forthcoming retirement of Sir Ralph Cope, the company's Chief Accountant. When this takes effect on March 31, Sir Ralph Cope will have served the G.W.R. for over 61 years, during 22 of which he has been Chief Accountant. Throughout that long period, said Lord Horne, he had served the company faithfully and zealously, and with an ability that had gained him an outstanding position in the whole railway world. The past year has been one of economical working with 395 fewer locomotives in traffic and coal consumption the lowest on record. The price of coal, however, is rising, and Lord Horne explained that every 1s. increase per ton costs the company £100,000 a year. It is to meet this situation that the company has decided to investigate the possibility of electrifying the main line from Taunton to Penzance (see also page 385). Other economies are to be achieved by the acquisition of 20 more diesel railcars. It is easier to economise in technical matters than where the creature comforts are concerned; the company's higher standard of catering is responsible for the diminished restaurant car and hotel profits. Regarding future sources of traffic, Lord Horne stated that 73 more factories have been or are being opened on the system. A growing business is the conveyance of broccoli from Devon and Cornwall, which last year produced a record tonnage of over 36,000 and increased receipts of £10,000.

* * * *

The Week's Traffics

An increase of only £36,000 was shown by the combined receipts of the four main-line companies for the past week as compared with the corresponding period of last year. Coal traffic increased £32,000 and merchandise £12,000, but passenger train traffic fell £8,000. The combined increase for the year to date is now £776,000 on aggregate takings of £20,173,000 or 4 per cent. Total takings for the past week were L.M.S.R. £1,196,000 L.N.E.R. £881,000, G.W.R. £483,000, and Southern Railway £349,000, representing increases of £6,000, £26,000, and £8,000 and a decrease of £4,000 respectively.

	7th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec	
	£	£	£	£	£	%
L.M.S.R.	− 2,000	− 2,000	+ 10,000	+ 6,000	+ 309,000	+ 3·90
L.N.E.R.	− 5,000	+ 14,000	+ 17,000	+ 26,000	+ 285,000	+ 4·83
G.W.R.	+ 1,000	+ 1,000	+ 6,000	+ 8,000	+ 127,000	+ 3·91
S.R.	− 2,000	− 1,000	− 1,000	− 4,000	+ 55,000	+ 2·28

Great Northern (I.) traffics for the past week, totalling £16,550, show an increase of £350; Great Southern, totalling £64,151, a decrease of £2,444; and Belfast and County Down, totalling £2,066, a decrease of £53. Mersey Railway receipts total £4,313, an increase of £103; and Liverpool Overhead £1,276, an increase of £48.

* * * *

Southern Expansion

It is rare that so many as three chief officers of a British railway should retire within a year, yet that happened on the Southern Railway in 1937. Mr. Holland-Martin, the Chairman, at the annual meeting yesterday duly recorded the retirement of Sir Herbert Walker, Mr. William Bishop, and Mr. R. E. L. Maunsell, and their replacement by

XUM

Mr. Gilbert Szlumper, Mr. H. L. Smedley, and Mr. O. V. Bulleid as General Manager, Solicitor, and Chief Mechanical Engineer respectively. The shareholders thereupon elected with acclamation Sir Herbert Walker to the board. The new chief officers embark on their responsibilities at a time of unprecedented growth of traffic. The total gross receipts were £1,313,000 more in 1937 than in 1936, and for the first time the company was carrying over a million passengers a day. The total of passenger journeys increased by 18,452,000, of which electrified lines accounted for about 15½ millions. This is on the top of an expansion during the previous year of 11 millions. Continental traffic went up by 468,000, and Mr. Holland-Martin mentioned that the train ferry service had been well patronised in its first complete year of operation, carrying 74,000 passengers. He uttered a word of caution about the dependence of the company's Continental traffic on the political situation in Europe. An impressive list of works for the improvement of the system to keep abreast of traffic expansion included a reference to the reform of the Waterloo & City Railway, and the response of the meeting to this promise gave an example of greater rejoicing over one repentant sinner than much consistent virtue.

* * * *

Overseas Railway Traffics

Decreases have continued on the Argentine railways during the past fortnight, the B.A. & Pacific losing £20,843, the Great Southern £26,799, the Buenos Ayres Western £20,844, and the Central Argentine £126,873. The Argentine North Eastern, however, recorded increases in the 32nd and 33rd weeks, the improvement in the latter being £1,067. In Brazil, the Leopoldina gained £2,426 in the seventh week but lost £4,262 in the eighth, finishing £377,000 down on the aggregate for the eight weeks. But the San Paulo has an aggregate increase for seven weeks of £12,812, to which the fortnight ended February 13 contributed £12,370.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific ..	34th	112,221	– 10,174	2,847,274	– 64,617
Buenos Ayres Great Southern ..	34th	208,271	– 19,851	4,894,664	+ 143,343
Buenos Ayres Western	34th	47,767	– 8,499	1,552,606	– 53,179
Central Argentine	34th	115,779	– 63,436	4,255,396	– 793,679
Canadian Pacific	7th	456,800	– 600	2,983,400	+ 5,800
Bombay, Baroda & Central India	47th	266,175	– 39,075	7,403,200	+ 58,050

Canadian Pacific earnings have fallen by £18,400 in the two weeks under review.

* * * *

Liverpool Overhead Railway

Passenger traffic in both classes increased during 1937, the numbers rising by 578,300 to 6,959,127. Workmen's tickets contributed 246,163 to the increase. Total receipts from passenger train traffic were £68,486 (£5,763 higher), out of which parcels accounted for £134, compared with £156 in 1936. Miscellaneous receipts reached £5,657 net (against £5,756), making a total revenue of £74,143. Working expenses, at £63,130, were higher by £782, but their proportion to the traffic receipts improved from 99·40 per cent. to 92·18 per cent. The operating results for three years are compared in the following table:—

	1937	1936	1935
	£	£	£
Gross receipts ..	68,486	62,723	61,538
Revenue expenditure ..	63,130	62,348	62,243
Miscellaneous receipts	5,657	5,756	5,683
Total net income ..	11,013	6,131	4,997
Debenture interest ..	6,755	6,755	6,755
Carried forward ..	*Dr.* 11,164	*Dr.* 15,122	*Dr.* 14,498

A surplus of £3,958 remains after payment of debenture interest and the transfer of £300 to contingency fund, which reduces the debit balance of £15,122 brought forward from 1936 to £11,164.

Londonderry and Lough Swilly Railway

Receipts from the road transport services of this undertaking increased by £2,463 to £64,809, but railway earnings fell from £22,427 to £22,058. Expenditure was higher in both branches, so that in net receipts the road transport gain over 1936 was reduced to £1,663, while the railway debit increased by £939. Combining the net receipts of road and railway operations gave a deficit of £1,380 (against a credit balance of £1,368 in 1936). Miscellaneous receipts were £3,607, leaving the total net income of the undertaking £3,023 lower at £2,227. The results of the past three years are compared in the following table:—

	1937	1936	1935
	£	£	£
Receipts of railway, road transport, &c.	87,311	85,278	71,075
Expenditure	88,691	83,910	71,077
Net receipts	*Dr.* 1,380	*Cr.* 1,368	*Dr.* 2
Miscellaneous receipts (net)	3,607	3,882	2,115
Total net income ..	*Cr.* 2,227	*Cr.* 5,250	*Cr.* 2,113

During the year the company increased its road fleet with one 36-seater Leyland bus and four lorries. There are now 98 road vehicles in the service of the company.

* * * *

British Industries

From February 21 to March 4 the British Industries Fair in its three sections, held respectively at Olympia and Earls Court in London, and at Castle Bromwich, Birmingham, displays all the essentials of Britain's power to produce anything from a needle to an anchor, an egg whisk to a bomb-proof shelter. It is a wonderful show, and contemplation of its real significance in the ability to provide for every individual an abundance of all material comforts and conveniences brings a sense of humiliation when human needs are so far from satisfied as they are at the present time. This, the largest national trade fair in the world, covering a total area of 857,000 sq. ft., is devoted to the exhibition of the peaceful products of our industry for the enticement of buyers from all over the world. A similar exhibition of the other phase of British production—that devoted to attempting to secure the continued existence of the country in the face of potential foes—would make perhaps an even more impressive show, and might be worth while if its terrifying display were to force a realisation of the lunatic conditions of a world in which nation fights against nation to dispose of its surplus production abroad rather than letting its own nationals enjoy the benefits they so badly need at home. "The fool hath his eyes in the ends of the earth."

* * * *

The Forgotten Man's Hope

An eloquent plea for the ordinary stockholder is put forward by our American contemporary, the *Railway Age*, in an editorial article which we reprint in this issue. He is referred to as "The Railroads' Forgotten Man" and indeed his lot, strikingly emphasised by the figures quoted, is a pitiful one. The net income made in the seven years 1931-37 by the American railroads was about $234,000,000. The railroads have about 71,000,000 shares of stock outstanding in the hands of the public. Their net income was about $3·30 a share for the seven years, or an average of only 47 cents (just under two shillings) a share annually. It may be interjected that at least the British railway stockholder is better off, but let it be recalled as significant that even during the relatively prosperous year just ended the L.N.E.R. did not earn its preference dividend in full. In the U.S.A., during the seven years quoted, the railroads paid $1,761,000,000 in taxes, or 7½ times as much as the net income. That is perhaps the worst aspect of the matter, because taxation,

by picking the pocket of the man in the street, reduces his ability to buy the things he wants, the things the producer eagerly offers him—and let it not be forgotten that railways, as producers of transport, are well to the fore in this solicitation. Thus consumer and producer alike are penalised by taxation. The *Railway Age* editorial urges stockholders to organise for their own protection, and thus voices in the U.S.A. similar advice to that recently given the British stockholder by Mr. William Whitelaw. Railway employees do so and by their united strength can secure good terms. We would, however, suggest to the serious consideration of stockholders and employees the advisability of refraining from fighting one another and, instead, joining forces to fight the octopus whose tentacles are crushing the life out of the individual, whether he be employer or employed, producer or consumer.

* * * *

A Critical Time in the U.S.A.

The message from our correspondent in the U.S.A., published on page 356, depicts a critical stage in railway affairs. With the passing into receivership during January of the Erie, and the Minneapolis, St. Paul & Sault Ste. Marie systems, no less than one-third of the total railway mileage is bankrupt, and several other companies are likely to go the same way this year failing higher revenues. The decision of the Interstate Commerce Commission on the application of the railways for increased rates has yet to be made known, and, even if favourable, the possibility must be considered of higher charges defeating their object by diverting traffic to the roads. Apart from the forthcoming railway financial conference with President Roosevelt announced in our issue of February 11, remedial measures for the railway situation are to be introduced to Congress by President Wheeler of the Senate Committee on Interstate Commerce. It is felt, however, that measures of rationalisation and grouping are liable to be counteracted by make-work legislation put forward by the unions, which are at present supporting a Bill to limit freight trains to 70 cars. This, it is estimated, would cost the railways £20 million a year. In addition, much of the competition which the railways have to face is subsidised by public funds.

* * * *

Holidays With Pay

It will be recalled that last summer negotiations between employers and the trade unions resulted in agreements under which paid holidays were granted, as from 1938, to some hundreds of thousands of employees in the engineering industry and also to railway shopmen. It is worthy of notice that agreements covering other important sections of industry have recently been concluded. Thus, as recorded on page 395 of this issue, it was announced that negotiations had produced an agreement providing for holidays with pay to time-workers and piece-workers in the shipbuilding and ship-repairing industries. Every employee is to be credited, in respect of every pay week, with an amount equal to one-fiftieth of the plain-time rate of his class, inclusive of bonus, for hours actually worked in that week, subject to a maximum credit in any pay week of one-fiftieth of his plain-time rate, including bonus, for a full working week of 47 hours. The sum of the amounts so credited to every employee throughout the year shall be payable at the recognised or agreed summer holiday period. In last week's issue (page 318) we referred to a report issued jointly by representatives of the Iron and Steel Trades Employers' Association, and the Iron and Steel Trades Confederation, advocating paid holidays for over 40,000 men in the heavy steel industry. All these negotiations, and the agreements resulting therefrom, would seem to lend support to the views expressed by the railway companies last November to the committee appointed by the Minister of Labour to study the question. In concluding their evidence the companies submitted that " any legislative measures compelling an industry to grant holidays with pay, irrespective of the particular circumstances of that industry, would . . . be adverse to the economic position of that industry, and would constitute a grave disservice to the valuable principle of settling wages and conditions of service by means of organised voluntary collective negotiation." The report of the Government committee is awaited with much interest.

* * * *

The Signal Engineer and the Permanent Way

Mr. G. H. Crook, who was elected President of the Institution of Railway Signal Engineers on February 23, spoke in his address (an abstract of which we publish on page 361) of the important relationship between the work of the signal and permanent way departments. The great cost of the track, notably switch and crossing work, makes it essential that the utmost traffic facility is obtained for every connection laid in, and that the signalling equipment is not unduly complicated. Planning of layouts thus calls for great care and judgment, involving a pooling of the signal engineer's knowledge with that of the operating expert, not to mention civil engineering experience, producing that combination of functions happily defined by the French expression *exploitation technique*. Like much else in railway working, this is something that has developed as necessity arose, and in the past many layouts, had they been planned with broader views, would have given far better return than they did for the money expended. In many cases, it is true, surroundings have prevented the engineer from doing all he could wish, but the more scientific planning of today has produced some excellent layouts, even with such hindrances. Some of the Continental layouts referred to by Mr. Crook, such as Brussels, by an extensive use of slip switches allow of remarkable freedom and multiplicity of traffic movements, calling for some involved controls in the signalling. Modern power equipment can, however, provide them, and here again the signal engineer has shown that he can do everything the operating department can desire of him.

* * * *

A Record Locomotive Run

What is believed to be the longest continuous run ever made by a steam locomotive in regular service, was completed recently when engine No. 3461 of the Atchison, Topeka and Santa Fe Railway hauled a train from Los Angeles to Chicago, a distance of 2,227 miles, without change. The locomotive is one of six recently built by the Baldwin Locomotive Works, and is of the 4-6-4 type burning oil fuel, and equipped with roller bearings on all wheels, the tender having a capacity of 7,000 gal. of oil and 21,000 gal. of water. The train was made up of a dynamometer car and ten to twelve heavy steel passenger vehicles, the number varying over different sections, representing a total trailing load of 757 to 939 tons. The run demonstrated that a conventional modern steam locomotive can make a long distance run with a heavy passenger train, which normally requires four engine changes between Chicago and Los Angeles. No attempt at a speed record was made during the run, the total time taken being 53 hr. 40 min., of which about 4 hr. 35 min. was spent at stations *en route*, loading and unloading mails, and re-making the train at various points. This left a running time of about 49 hr. 5 min., giving an average speed of 45·4 m.p.h. for the entire run. The maximum speed attained was 90 m.p.h.

XUM

London Midland & Scottish Railway

THE interim dividend statement published last July clearly foreshadowed a large increase in the working expenditure of this company for the whole year 1937 and the report now issued shows the extent to which the large increase in gross receipts was offset by the advance in expenses. In gross railway receipts, which amounted to £67,234,080, there was an increase of £2,771,238, and the railway expenditure of £53,597,673 showed an advance of £2,386,672, making the operating ratio 79·72 per cent. against 79·44 per cent. Net railway receipts accordingly improved from £13,251,841 to £13,636,407. Dividend distributions for the past nine years are as follow:—

	1929	1930	1931	1932	1933	1934	1935	1936	1937
	%	%	%	%	%	%	%	%	%
Ord. stock ..	4½	2	¼	Nil	Nil	Nil	Nil	1¼	1½
Pref. 4% (1923)	4	4	4	Nil	Nil	1⅛	4	4	4
Red. Pref. 5% ..	5	5	5	3⅜	4⅜	5	5	5	5
Pref. 4% ..	4	4	4	3	3½	4	4	4	4

Ancillary businesses as a whole gave a net return in 1937 of £229,521, compared with £307,690 in 1936. Road transport was up £1,932, steamboats improved by £11,648, and docks by £22,418, but the profits of the hotels department were down £35,683, and the losses on canals, collection and delivery, and air transport were greater by £14,467, £55,184, and £8,653 respectively. The company's share of net receipts from J. Joint Lines was, however, £49,913 greater, mainly owing to the fact that its profits from the Cheshire Lines increased from £25,128 to £87,553. Miscellaneous receipts (net) were £8,538 lower. General interest receipts were £41,528 lower, and the Northern Counties Railway (Ireland) yielded only £2,374 against £9,882. On the other hand dividends from associated omnibus undertakings improved from £260,587 to £312,675. Profits from Carter Paterson and Hay's Wharf Cartage were £31,772 against £30,700, and from David MacBrayne Limited were £7,500 against £7,029. Joseph Nall & Co. Ltd. brought in £1,817 as before, but the profits from Wordie & Co. Ltd. were £6,875 against £7,232. The accompanying table compares results for the past three years:—

	1937	1936	1935
	£	£	£
Total expenditure on capital account	456,684,343	454,444,204	452,843,092
Gross receipts from businesses carried on by the company	75,855,536	72,718,669	69,455,245
Revenue expenditure on businesses carried on by the company	61,989,608	59,159,138	57,043,635
Net receipts of businesses carried on by the company	13,865,928	13,559,531	12,411,610
"J" Joint Lines—company's proportion of net revenue	154,509	104,596	68,314
Miscellaneous receipts (net)	2,149,900	2,158,438	2,291,005
Miscellaneous charges ..	1,814,061	1,774,389	1,743,404
Net revenue	14,356,276	14,048,176	13,027,525
Rates and rate relief recoverable, years 1931–1934	—	3,180,000	—
Appropriation to contingency fund	—	3,180,000	—
Interest on debenture stocks	4,439,170	4,439,170	4,439,170
Dividends on guaranteed and preference stocks ..	8,474,383	8,474,383	8,474,383
Balance after payment of preference dividends ..	1,442,723	1,134,623	113,972
Dividend on ordinary stock	1,428,037	1,190,031	—
Rate per cent.	1½	1¼	Nil
Surplus (+), or deficit (−)	+ 14,686	− 55,408	+ 113,972
Balance brought forward from previous year ..	79,083	134,491	20,519
Balance carried forward to subsequent year.. ..	93,769	79,083	134,491

Passenger receipts improved from £19,421,208 to £20,379,099. First class ordinary receipts amounted to £1,598,849, an increase of £86,330 or 6·58 per cent., and the total first class receipts of £1,889,490 (including season tickets) represented 9·27 per cent. of the total receipts from passengers. Parcels, mails, &c., brought in £6,615,212, an increase of £73,228. Higher class merchandise receipts improved by £451,859 or 2·46 per cent., against an increase in tonnage of 1,087,478 tons or 3·81 per cent. In classes 1-6, with an increase of 1,843,912 tons or 6·38 per cent., the increase in receipts was £449,149 or 7·40 per cent. Coal class tonnage was greater by 3,742,844 tons or 4·97 per cent., bringing an improvement in receipts of £870,002 or 6·80 per cent.

During the year expenditure was heavily increased owing to the rise in prices of materials, the restoration of the temporary deductions from salaries and wages, and additions to rates of wages and improvements in conditions of service, which account for approximately £1,875,000 of the total increase in revenue expenditure (or 60 per cent. of the increased receipts). The remaining £955,000 of the increased expenditure (or 30 per cent. of the increased receipts) is due to the additional volume of business. During 1937 635 miles of running line were completely renewed, against 583 miles in the previous year. Renewals of locomotives and rolling stock were on the whole not so numerous as in 1936 when the work in this respect was particularly great. Heavy repairs were generally more extensive. The number of steam locomotives under or awaiting repair at the end of 1937 was 362, against 437 at the end of 1936. The report shows the company to be in a thoroughly sound financial position.

* * * *

London & North Eastern Railway

THE gross revenue earned by the company during 1937 showed an improvement in every department, and although large increases in salaries and wages, resulting from the award of the Railway Staff National Tribunal in August last, together with higher prices of fuel and materials have offset the improvement to some extent, there was still evidence in the net figures of better conditions generally. Net revenue for the year was £10,107,442. Adding to this the balance brought forward from the previous year, of £66,425, there is available a sum of £10,173,867. After providing for all fixed charges, and appropriating £150,000 to the Contingency Fund, and after meeting in full the dividends on the guaranteed stocks, the 4 per cent. first preference stock and the 5 per cent. redeemable preference stock, there remains a balance of £1,241,414, with which it is proposed to pay a dividend of 1¾ per cent. on the 4 per cent. second preference stock, leaving a balance of £83,926 to be carried forward. This compares with the payment for 1936 of ½ per cent., this latter having been the first dividend on the second preference since that of 1931, as is shown by the following statement:—

	1929	1930	1931	1932	1933	1934	1935	1936	1937
	%	%	%	%	%	%	%	%	%
Pref. Ord. 5% ..	3	¼	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2nd Pref. 4% ..	4	4	1	Nil	Nil	Nil	Nil	½	1¾
1st Pref. 4% ..	4	4	4	1	2	3½	3¾	4	4
Redeem.Pref.5%	5	5	5	1¼	2½	4 1/16	4 1/16	5	5

The improvement in net results, making possible such a welcome increase in the distribution, more than confirmed expectations, especially as it was accompanied by an important initial appropriation to the Contingency Fund. The gross railway receipts, at £49,086,681, were £2,203,196 higher than in 1936, and railway expenditure was £39,540,466 or £1,385,474 higher. Passenger train receipts totalled £17,625,031 or £654,479 more. Merchandise and livestock were £17,898,432 or £672,509 more,

and coal £13,173,969 (+£868,750). The figures are still below those of 1929, the decreases on this basis of comparison being £1,472,000 in passenger receipts, £3,955,000 in merchandise and livestock, and £958,000 in coal and coke. In spite of the improvement in passenger traffic its volume is still 6·07 per cent. below the 1929 level, although there has been a marked increase in long distance travel fostered by cheaper fares and better facilities. Total number of passenger journeys (excluding season tickets) increased over 1936 by 7,315,553 or 3·54 per cent. The following table compares the results of the past three years:—

	1937	1936	1935
	£	£	£
Total expenditure on capital account	352,589,512	351,736,607	351,554,147
Gross receipts from businesses carried on by the company	56,430,244	53,943,907	51,818,934
Revenue expenditure on ditto	46,799,159	45,146,124	43,945,267
Net receipts of ditto	9,631,085	8,797,783	7,873,667
"J" Joint Lines—company's proportion of net revenue	441,841	315,956	284,101
Miscellaneous receipts (net)	1,020,152	992,404	1,162,408
Miscellaneous charges	985,636	964,748	948,803
Net revenue	10,107,442	9,141,395	8,371,373
Appropriation to contingency fund	150,000	—	—
Interest on loans and debenture stocks, &c.	4,222,274	4,274,263	4,263,350
Dividends on guaranteed and preference stocks	5,717,667	4,890,890	4,160,874
Balance after payment of preference dividends	17,501	*Dr.* 23,758	*Dr.* 52,851
Surplus (+) or deficit (−)	+17,501	−23,758	−52,850
Appropriation from reserve	Nil	50,000	50,000
Balance brought forward from previous year	66,425	40,183	43,034
Balance carried forward to subsequent year	83,926	66,425	40,183

Net expenditure on capital account for the year amounted to £852,905, but capital expenditure for the current year is estimated at £8,385,000, of which over £4,250,000 are for works scheduled to the London Passenger Transport (Agreement) Act, 1935, or the Railways (Agreement) Act, 1935, and £3,639,000 for additions and improvements to rolling stock. Good progress has been made with the works provided for under the Railways (Agreement) Act, 1935, but certain of these works have been postponed in view of the increased costs of materials and wages. The decision of the National Tribunal in August last involved an additional cost in the year of £326,000, and will mean an extra expense in a full year of £1,000,000. The Railway Rates Tribunal approved the proposal of the companies for a general increase of 5 per cent. in their charges and this came into operation on October 1. It is obviously difficult to say yet to what extent this has affected the revenues of the company. As regards the important question of fuel, it is not yet possible to express an opinion on the new sale organisations, except that the effect so far has clearly been to add materially to the cost of locomotive coal. During the year 1937 the increased price for locomotive coal cost the company £203,750, which is more than is required to pay ¼ per cent. on the second preference stock. An extra shilling a ton in the price of coal costs the company about £225,000. Competition with road haulage companies remains unabated and the railways are still handicapped by the inadequate regulation of the carriage of goods by road. The control of road rates is, however, under consideration by the Transport Advisory Council.

The company's investment in associated bus companies at the end of 1937 was £2,398,201, and the dividends from this source represent a return on the investment of 11·8 per cent. being 2 per cent. higher than in 1936. In addition a saving can be recorded of some £108,000 a year, as a result of closing branch lines, reduction of train services and co-ordination arrangements with road transport operators. The company's steamship account again shows an improvement with a credit balance of £49,027 which is £28,309 greater than in 1936. There was an increase in receipts of £58,908 due to improved passenger traffic *via* Harwich, while expenditure was £30,599 higher by reason of fuel costs and higher rates of pay. The number of passengers *via* Harwich was 10·9 per cent. more than in 1936 and almost as great as in 1930, the record year, while cargo also improved but at a relatively low level. As regards other ancillary businesses, dock account showed an increase in gross receipts of £59,016 in spite of the fact that Tyne Dock had been disposed of as from April 30, 1937. Hotels account also showed an improvement, although owing to higher prices expenditure increased and net receipts were up by only £1,313. The policy of modernising the hotels has been continued.

* * * *

Electrification Developments

AT variance although they may appear superficially, there is nothing really contradictory in the recent announcements regarding electrification which have been made by the Southern and Great Western Railways, because the considerations involved are totally dissimilar. The Southern Railway, with its dense suburban traffic and easily accessible seaboard, has progressed further than any of the other main-line companies in the direction of electrification, and its achievements in this realm have been noteworthy. The remuneration of the capital expenditure involved is, however, being secured from the rapid development of the traffic. So far as the plans for electrifying the main line from Sevenoaks to Hastings via Tunbridge Wells are concerned, the facts are that the increases in the costs of labour and materials since the work was sanctioned in 1935 have changed the economic aspect of the scheme. Further, the existence of the alternative electrified route to Hastings has already diverted many passengers from the direct route. Electrification of the latter would doubtless bring back the passengers who formerly travelled that way, but this would not necessarily increase the net revenue from traffic passing by both routes. Certain other adverse physical factors were apparent when the scheme was planned and, in all the circumstances, the Southern Railway has decided that it is inopportune to proceed with the work at present.

The territory served by the Great Western Railway, however, does not possess such traffic potentialities or such dense suburban traffic apart from one or two localised areas. At present the only sections electrified are those between Bishop's Road and Hammersmith, and Wood Lane and Ealing, about nine route miles, both lines being operated jointly with the London Passenger Transport Board. Arrangements are in progress also, jointly with the board, for extending the Central London Railway to Ruislip. Consideration has been given previously to the electrification of a section of the main line, but for various reasons, the project was not proceeded with. The recent heavy increases in the price of locomotive coal —of which the company uses about two million tons annually—coupled with the rise in the wage bill, has rendered it necessary to examine very carefully the possibilities of reducing operating costs. An eminent firm of consulting engineers has therefore been asked to prepare a scheme for the electrification of a portion of the system, as recorded elsewhere in this issue. Apart from electri-

XUM

fication, the company, which has already 17 diesel passenger railcars in successful operation, proposes to acquire further cars to work branches off the electrified main line in the West of England.

So far as electrification by the other group companies is concerned, the L.N.E.R. has practically completed its £500,000 Tyneside scheme, and has placed large contracts for work on electrifying the main line from Manchester to Sheffield and the suburban lines from Liverpool Street and Fenchurch Street to Shenfield, although the work will probably occupy two to three years. The L.M.S.R. has also nearly completed an extensive scheme of electrification in the Wirral area.

* * * *

Great Northern Railway (Ireland)

RECEIPTS from railway passengers improved from £431,612 in 1936 to £450,307 in 1937, and the increase was general except for a slight fall in second class season ticket returns and a drop of £2,532 in workmen's tickets. Mails, parcels, &c., brought in £123,746, a decrease of £2,955. In the goods train traffic receipts of £492,564 there was a fall of £11,853. Total railway receipts amounted to £1,109,669, an increase of £4,183 or 0·38 per cent., and the railway expenditure of £1,011,397 showed an advance of £3,591 or 0·36 per cent., making the operating ratio 92·21 per cent., against 92·18 per cent. The net railway receipts of £98,272 show an improvement of £592, but this advantage is all swept away by the fact that the net receipts from the road passenger services in the Irish Free State have fallen from £13,345 in 1936 to £3,111 in 1937 notwithstanding a rise of £5,091 in gross receipts.

A note is added to the report that no adjustment has been made in the 1937 accounts in respect of the pool for the years 1936 and 1937 of the traffic receipts in Northern Ireland of the railway companies and of the Northern Ireland Road Transport Board, as the amounts receivable or payable by the various parties have not yet been finally ascertained. The directors also state that the success which was expected to attend the operation of the Road and Railway Transport Act (Northern Ireland), 1935, has not been realised, and that, in association with the other companies operating in Northern Ireland, they have made representations to the Government in regard to the serious situation which has resulted. Profits from hotels, refreshment rooms, and cars were £483 less than in 1936. The accompanying table compares the general financial position for the past three years:—

	1937	1936	1935
	£	£	£
Total expenditure on capital account	10,052,929	10,052,929	10,052,929
Gross receipts from businesses	1,320,073	1,305,845	1,312,802
Revenue expenditure on ditto	1,214,308	1,189,955	1,211,617
Net receipts of ditto	105,765	115,890	101,185
Miscellaneous receipts (net)	33,725	35,428	38,947
Total net income	139,490	151,318	140,132
Interest, rentals and other fixed charges	115,229	115,099	114,825
Dividend on guaranteed stock	34,771	34,771	34,771
Balance	10,510 Dr.	1,448	9,464 Dr.
Balances released from miscellaneous accounts	9,062	—	9,464
Brought forward	1,448	—	—
Carried forward	—	1,448	—

Mileage run by the company's engines has increased from 4,758,298 to 4,918,563, and locomotive running expenses show an advance of £12,252, of which increase £10,220 is in coal. Traffic expenses are up £8,418, and £9,604 more is charged to maintenance of rolling stock. In general charges, however, there is a saving of £2,897, and in rates one of £23,904. The balance sheet shows that the cost of acquiring road motor services in the Free State, apart from the value of working stock, is £174,349. The stock at cost in the Northern Ireland Road Transport Board not charged as capital expenditure is given in the balance sheet as £39,763.

* * * *

Great Southern Railways

NET receipts from the railways and road transport decreased by £67,586 in 1937, the gross earnings being £37,597 lower and expenditure higher by £29,989. The increased expenditure was attributable to the railways, on which the outlay rose by £37,515 to £2,894,748; against this went a saving of £17,340 on road services. Railway receipts having fallen by £60,939 to £3,201,263, the operating ratio deteriorated from 87·88 per cent. in 1936 to 90·71 per cent. Passengers and parcels last year accounted for 40·50 per cent. of the railway traffic receipts, against 39·99 per cent. in 1936. The goods traffic percentage accordingly fell slightly from 60·01 per cent. to 59·5 per cent. Total receipts from passenger train traffic were £7,914 lower at £1,287,074, first class takings falling by £1,350, third class by £2,496, and seasons by £1,825; parcels improved by £164, but expenses of collection and delivery for mails, parcels, excess luggage, and other merchandise by passenger train were £591 higher. The total goods train receipts of £1,890,798 showed a fall of £52,485, but expenses of collection and delivery in this field were reduced by £7,930. Livestock traffic fell by £15,999; and coal, coke, and patent fuel by £7,002; other minerals, however, improved to the extent of £8,859. An increase of £9,625 was shown in gross receipts from hotels and refreshment services, but an increased expenditure of £8,879 was incurred. Results of the whole undertaking are compared in the following table:—

	1937	1936	1935
	£	£	£
Total expenditure on capital account	31,054,309	30,863,778	30,515,167
Gross receipts from businesses	4,329,326	4,366,923	4,150,958
Revenue expenditure on ditto	3,924,660	3,849,671	3,653,165
Net receipts of ditto	404,666	472,252	487,793
Miscellaneous receipts	41,685	36,540	57,974
Total net income	446,351	508,792	545,767
Interest, rentals, and other fixed charges	366,321	348,401	360,684
Dividend on guaranteed preference stock	77,727	155,454	194,298
Surplus or deficit (+ or −)	+ 2,303	+ 4,937	− 9,215
Brought forward	34,607	29,670	38,885
Carried forward	36,910	34,607	29,670

Miscellaneous receipts were £5,145 higher, the increase including £1,299 more in rents from houses and lands, and £3,659 more under general interest. Road transport services produced gross receipts of £974,707, or £15,881 above 1936. Passenger earnings increased by £19,704 to £520,976, but there was a drop of £10,795 in goods receipts. Hire of vehicles earned £4,184 more than in the previous year. The company's road passenger fleet now totals 318 buses, compared with 308 at the end of 1936. Goods and parcels road motor vehicles number 647. The directors regret that dividends are still unavailable on the preference and ordinary stocks of the company, but propose to pay 4 per cent. on the 4 per cent. guaranteed preference stock for the year ended December 31, 1937, which will absorb £77,727. The report records that the Railway Tribunal granted the company's application for a 5 per cent. increase on all charges—standard and exceptional—which has taken effect from January 1 of this year.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Passenger Fares and Facilities in 1938

Montreal, Canada
January 27

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Referring to your article, "Passenger Fares and Facilities in 1938," in your issue of January 14, you write:—

> Nearly 40 per cent. of the railway passenger revenue during the nine months ended September last was secured from monthly return tickets, and there is no doubt that the reasonable rates of approximately 1d. a mile third class, and 1½d. a mile first class, with the availability of one month and unlimited break of journey facilities, have made these tickets extremely popular.

By way of comparison of rates, my monthly ticket here costs $8·90, say 35s. 6d., and is for 50 journeys. Each journey is 20·4 miles. The cost per mile, therefore, is less than one halfpenny. There is but one class, and a ticket is good only for thirty days, including date of issue.

Yours very truly,
H. W. H.

[Our correspondent appears to be confusing monthly return tickets and monthly season (or contract) tickets; the former are available only for one return journey during their month of currency, whereas the latter are available for unlimited travel between the points stipulated thereon during their currency. For the purpose of comparison with the cost of our correspondent's ticket we may quote the third class monthly season ticket between Victoria and Redhill (21 miles) which is 42s. 9d.; between King's Cross and Welwyn Garden City (20¾ miles), 39s. 6d.; Paddington and Burnham (21 miles), 39s. 9d.; and Liverpool Street and Shenfield (20¼ miles), 40s. 9d. These points are respectively to the south, north, west, and east of London.—ED. *R.G.*]

The Fastest Train in the World

6, Kenmare Road,
Liverpool, 15
January 30

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Referring to the brief editorial in your issue concerning "The World's Fastest Train," I see that the Milwaukee's Hiawatha run at 73·9 m.p.h. duly takes its place as America's fastest steam run, conceding first honours to Germany in that category. While the Hiawatha, all things considered, is undoubtedly America's fastest steam train, there is a "dark horse" in the running for maximum speed honours. Mr. Donald M. Steffee, of Buffalo, N.Y., an indefatigable expert on American railway speed matters, recently drew my notice to the rival "blue riband" claim of Milwaukee train No. 14, the Chippewa. On the Milwaukee—Chicago sub-division, No. 14 is booked in an even 30 min. from a stop at Sturtevant to a "flag," or conditional, stop at Deerfield, a distance of 37·9 miles. This returns an average rate of 75·8 m.p.h., and would even appear to give this Milwaukee "snippet" the advantage over the German steam run, besides making it America's fastest steam-hauled booking.

The relevant working timetable details are as follows: Sturtevant, stop 8.40 p.m.; Ranney (10·2 miles) pass 8.49; Wadsworth (18·9 miles) pass 8.55; Rondout (29·5 miles) pass 9.02; Deerfield (37·9 miles) pass 9.10; with a footnote stating: "No. 14 will stop at Deerfield to let off passengers from Green Bay or north." Over this stretch the Chippewa's timing is the same as the Hiawatha's, although the latter's includes no stop.

Yours faithfully,
F. HEWITT

[It is the general principle, in compiling figures concerning the fastest railway runs, to exclude journeys made to and from conditional stops, for the double reason that such journeys are made only at irregular intervals, and also that the tendency is to advertise the stop a minute or so in advance of the time that the train is actually due, so that passengers to be picked up may be at the station in ample time. The "flag" stop of the Milwaukee's Chippewa at Deerfield comes in this category, as, although it is in this case to set down and not to pick up, by its intermittency it cannot rank with runs which are made daily, or even with the regularity of the once-every-five-days journeys of the Chicago—Pacific Coast diesel-electric trains.—ED. *R.G.*]

The G.W.R. London-Birmingham Service

London, February 21

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Few of those who are familiar with the topographical features of the London—Birmingham main line of the Great Western Railway will be disposed to quarrel with the contention, expressed in the interesting article appearing in your February 11 issue, that existing timings with maximum loads impose a severe task of haulage on the locomotives employed. There is one point in this connection, however, that the article mentions but fails to explain. It is that in October, 1933, two of the down two-hour trains—the then 11.10 a.m. and 4.10 p.m. from Paddington—were slowed down to a journey of 2 hr. 5 min. from Paddington to Birmingham, even though this meant altering the systematic series of departures from Paddington at 10 min. past the hour. The unexplained mystery is that the two trains so altered are normally two of the lightest trains of the day, whereas the two most difficult down schedules from the load point of view—the 2.10 and 6.10 p.m. expresses—were left and still remain unaltered. Much of the criticism that has been levelled against the G.W.R. in connection with this service might be abated if all the down services were restored to their systematic departure times and to a two-hour run, as well as the 12 noon from Birmingham to Paddington, another similarly decelerated train.

Another service that the G.W.R. might render, of considerably greater value than that of paring minutes from the two-hour schedules, is to restore the midday service that once left Paddington for Birmingham and Wolverhampton at 12.50 p.m., and was most useful to those who desired a morning in London, lunch on the train, and a good part of the afternoon in the Birmingham area. The tremendous gap in departures between 11.10 a.m. and 2.10 p.m. from Paddington, and 11.30 a.m. and 2.20 p.m. from Euston, is a bad blot on an inter-city service that boasts more than sufficient trains to afford an hourly departure from London for Birmingham and *vice versa*. Pooling of service offers the traveller choice of route, but little or nothing has been done on these or any other competing main lines in Britain to offer him choice of departure time as well.

Yours faithfully,
VERITAS

56, St. Mary's Mansions,
Paddington, W.2
February 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I am indeed glad that your editorial comment on Mr. Westall's letter last October has not proved to be the final word on "60-m.p.h. trains to Birmingham," and that the train service between Paddington and Birmingham—using, as your article on February 11 stated, a route "constructed with a view to high-speed running"—can, under certain limitations, be accelerated. Everyone who is familiar with the G.W.R. express schedules will probably admit that the existing 2-hour trains, with present stops and loads, demand harder locomotive work than anything else in the current timetable, and that it would be unreasonable to expect much acceleration on the existing programme. But

XUM

the London and Birmingham traffic undoubtedly deserves, at certain hours, non-stop trains in 1¾ hours, and if only a real pooling of services—so often advocated in your columns—were undertaken by Euston and Paddington, an hourly regular-interval service of expresses could be provided, supplemented at business hours by a few non-stop limited-load trains, for which a compulsory seat-registration fee might fairly be demanded. At certain hours, no doubt, a simultaneous service on both routes would be necessary to lift the traffic and to meet the needs of intermediate towns, but it would at least be possible to bridge the long gaps which now exist (the classical instance is the interval from 11.30 a.m. to 2.10 p.m., created in 1924 by the simultaneous withdrawals, as the first-fruits of co-operation, of the 12.50 from Paddington and 1.15 from Euston); and to avoid the heavy mileage bill which has to be faced when accelerations are carried out with no regard for the services on parallel routes.

Mr. Baker has quoted the performance of the Grand National specials on the 110-min. schedule to Birmingham, and I could add, from my own experiences with "Castles" or "Kings" on the regular 2-hr. schedule, many cases where the suggested 105-min. timing has been bettered intermediately—in particular, a start-to-stop run from Banbury to Paddington in 63¼ min. (the proposed booking is 65 min. from passing Banbury) and numerous cuts on the proposed 16½ min. from Banbury to Leamington. But it is hardly fair to stress isolated performances, though, as the 105-min. timing is obviously designed to give a comfortable and punctual journey under all conditions, I would certainly suggest a reduction of 1½ min. in the Wycombe-Leamington time and a corresponding increase of the Leamington—Birmingham allowance. It is a good principle—widely adopted with high-speed runs abroad—to allow a little latitude on the concluding length of the journey.

The 300-ton figure, suggested for the load of the 105-minute trains, is surely a very generous estimate. The six modern passenger-carrying vehicles of the Bristolian, for instance, give 66 first class and 216 third class seats in a tonnage of 187, and the addition to a similar set of one restaurant or buffet-car (ample catering provision for a 1¾-hr. run) and another composite would still leave the load little over 250 tons. Many of the Euston and Birmingham trains, in spite of Coventry traffic, three-a-side third class compartments, and very lavish-restaurant car tonnage, do not exceed the 300-ton figure.

Yours, &c.,
R. E. CHARLEWOOD

Local Services on Main Lines

London, February 12

To the Editor of The Railway Gazette

Sir,—I am rather puzzled by the opening sentences in Mr. Stewart Haram's letter, in your issue of February 11, for it was Mr. Watkin's contention, now supported by Mr. Haram—that local services are bound to suffer where acceleration of express trains take place—which I tried to disprove in the letter you published on January 21.

As regards the particular example of the Bedford to Luton service, certainly there is room for a local train to run between the 4.5 and 4.36 departures from Bedford—or between the expresses due at St. Pancras at 3.32 and 4.10, or 4.10 and 4.47, if a local train were required at these hours—and the "long gap" from 1.45 to 5.32 is *not* attributable to acceleration. I suggested, however, that as 35 minutes appeared from the timetable to better minimum time needed for a stopping train from Bedford to Luton (the average time of all slow trains, or the time previously taken by the 4.48, is quite immaterial) a very slight alteration of the expresses now due at St. Pancras at 5.50 and 6.16 would obviously enable the old 4.48 to leave Bedford at about 5.5, instead of 5.32, which I hope both Mr. Watkin and Mr. Haram would admit to be a reasonable solution of the trouble. But it seems to me to be unfair and mischievous to attribute to "acceleration" defects in a local service which the timetable itself can mitigate or remove.

The difficulties of the L.N.E.R.—with a denser passenger traffic than the L.M.S.R. Midland division and two "bottlenecks" on the first 25 miles from King's Cross (not to speak of Hatfield station)—appear to me to be even greater than those of the Midland, and King's Cross to Hitchin must be nearer its "limit" than St. Pancras to Bedford. But the advocates of greater use of the "avoiding line *via* Hertford" must not forget that during the "residential" hours the latter is fully occupied by a local service which could not be interfered with.

Yours, &c.,
VIATOR

Surveyors in the Railway Mania

Essex House, Essex Street, W.C.2,
February 14

To the Editor of The Railway Gazette

Sir,—Francis in his History of the English Railway (1851) records the scramble there was in the railway mania of 1845 to secure the services of surveyors. He says:—

"By arrangement of the board of trade it had been decreed that all lines which desired to be proceeded with in the ensuing session should lodge the necessary documents by the 30th November (1845); and a most extraordinary demand for surveyors was the consequence. . . . In vain did advertisements promise high pay and make no great requirements. The demand exceeded the supply. . . . The pay was in proportion to the urgency, and many men received for a week's work more than they could have honestly earned by a year's labour. Sixty persons in the employ of the ordnance department left their situations, and as their appointments enabled them to enter land without permission from the owner, they were warmly welcomed and largely paid."

I have found an official announcement in *The London Gazette* of November 7, 1845 (page 3720), which throws light on this passage. It is in the following terms:—

"Office of Ordnance 7th November 1845"

"Whereas John Bates (here follow the names of 65 others) being persons hitherto employed in this Department, have left the same for the purpose of assisting in the survey of projected railway lines and other works, and have in their possession appointments from the Board of Ordnance, enabling them for the purpose of the Government surveys to enter lands without being deemed trespassers; notice is hereby given that the above-named persons, having ceased to be employed by this Department, such appointments have become cancelled, and any use being made of them, for the purpose of entering lands after this notice, subjects the offender to a penalty of £50, and all persons to whom such appointments may be presented are authorized to detain them and forward the same to R. Byham, Esq., Secretary to the Board of Ordnance, Pall-Mall, London.

By Order of the Master-General and Board of Ordnance
R. BYHAM
Secretary"

Yours faithfully,
KENNETH BROWN

Travelling in Ceylon

The Minister of Communications of Ceylon, Major J. L. Kotalawala, has, according to an article by J. Vijayatunga, introduced the *Palayan-Baan*, or "go as you please" ticket, which allows the traveller to go for ten days to any part of the island for less than a pound. There are first class tickets, too, costing £3 15s. for two weeks or £5 12s. 6d. for a month. These tickets are available throughout the year, and some idea of the value which they offer may be gained from the fact that there are 834 miles of broad (5-ft. 6-in.) gauge railway and 117 miles of 2-ft. 6-in. gauge line included in the Ceylon Government system. A further facility allows tourists to engage temporary servants on the railway, the charge being £1 2s. 6d. for a fortnight or £1 17s. 6d. for a month. These servants save the traveller a good deal of trouble and expense and the extra for their transport and wages is well repaid. Rest houses, invariably situated on a hill, overlooking a lake or river, or by the sea, are available on the main roads and close to the railway stations. Anyone may use these to rest from half-an-hour to six hours for as little as 4½d., buying meals and refreshment at moderate prices, or one may stay for a whole day with meals and baths for about eleven or twelve shillings.

PUBLICATIONS RECEIVED

Swiss Federal Railways Calendar, 1938.—This illustrated calendar, from the Publicity Department of the Swiss Federal Railways at Berne, fully maintains its reputation as an informative and often persuasive guide to the national transport system. The sympathies of users are captured on the first page, where a desolate snow scene appears above the caption, "how pleasant to ride safely, swiftly, and conveniently in the well-warmed coaches of the Federal Railways." A little further on a homeward-bound businessman is seen enjoying his ease and his evening paper in a buffet car; "what a relief to rest after the day's work!" ejaculates the caption, in terms that will command universal assent. In addition to providing the transport necessary for the conduct of everyday affairs, the Swiss Federal Railways offer their services in more intimate matters. "A little trip by railcar after the wedding!" exclaims the inscription on one page of the calendar, and the picture shows a bride and her attendants entraining for this delirious climax to the day's festivities.

Several pages deal with the door-to-door transport facilities of the Federal Railways, extending to through bookings for goods over mountain and private lines. Allied with this service is the installation of private works sidings, of which there are 431 km. in Switzerland. The high proportion borne by this figure to the 2,865 km. of the Swiss Federal Railways themselves is commented upon. As regards pictures of motive power, electric locomotives and railcars predominate, but a steam engine is seen in one illustration placidly breathing wreaths of smoke and steam towards an overhead contact line—"the symbol of the new age." It is remarked that only 26·8 per cent. of the total Federal Railways mileage is now steam-worked. Three views this year recall the importance of Switzerland as a link in international routes, by showing the Rheingold, the Edelweiss Pullman (leaving Basle behind an Alsace-Lorraine steam locomotive), and the Arlberg - Orient Express. The picture, reproduced on page 373, of the oldest locomotive in Switzerland alongside a modern railcar provides an interesting measure of progress.

Grand Tours of Europe.—In the Victorian era tradition demanded, where income permitted, that the son of the house, to round off his education, should make a "Grand Tour." Times change, and what was the privilege of the few tends constantly to become the prerogative of the many. Sensing that transition, it was in 1934 that the firm of Cook's was able, by virtue of its resources and connections, to bring about a new way of seeing the countries of Europe—the Grand Tours of Europe by special trains. Several improvements and changes are announced in a handbook we have received of this year's arrangements for these now well-known tours in Italy, Central Europe, Scandinavia, and France. We have also received a copy of "Open-Air Holidays Abroad," which features inexpensive walking, canoeing, and cycling holidays centred on various mountain resorts, principally in Germany, the Tyrol, France, and Belgium. Both publications may be obtained from Thos. Cook & Son Ltd., Berkeley Street, London, W.1.

Easter Holidays.—Thos. Cook & Son Ltd. has now published an Easter holiday programme for 1938, listing facilities for economical travel and accommodation at home and abroad. Many of the inclusive rates show special reductions this year, and in some cases provide reserved seats in special tourist expresses. For those wishing to spend Easter at British resorts, the handbook quotes 5-day and 7-day charges which include third class monthly return from London and accommodation at a choice of three or more grades of hotel.

L.M.S.R. Tide Tables for 1938.—The L.M.S.R. has issued its tide tables for 1938 in connection with its English ports at Garston, Barrow-in-Furness, Heysham, Fleetwood (Lancs), and Goole (Yorks); and at Grangemouth, Ayr, and Troon in Scotland. The tide tables are contained in handy pocket booklets, bound in stiff covers, and containing general information on the port, including dock regulations, docking charges, and towage fees. A large-scale map is included. The booklets may be obtained free of charge on application either to the appropriate local L.M.S.R. officer or to the L.M.S.R. headquarters at Euston House, London, N.W.1. The details of the Scottish ports may also be had from the Commercial Manager, Central Station, Glasgow.

Axle-Counting Equipment.—Notwithstanding the wide and continually extending use of track circuits in railway signalling, a demand is felt for some other means of indicating automatically the presence of vehicles on a given section of line. This has led to numerous attempts to develop apparatus capable of registering the passage of wheels past a given spot, and their passage in the opposite direction at the same spot or past some other point further on in the original direction of movement, thus proving that the section of line in question is once more clear. Proposals for such wheel-, or, as it is also termed, axle-counting equipment were made at least 35 years ago, and from time to time numerous devices have been constructed and tried, with varying degrees of success. The problem is much more difficult to solve than appears at first sight, both in theory and from the point of view of design, mechanical and electrical, so that it is not surprising that it is only in recent years that hopes of doing so appeared reasonably justified. The large use of steel sleepers in some countries, such as Germany and Switzerland, led to much thought and experiment being devoted there to the construction of axle-counting equipment.

The apparatus described in the present publication, from the Siemens & General Electric Railway Signalling Co. Ltd., East Lane, Wembley, Middlesex, employs the ingenious leaf spring type of treadle, used for some time in Germany, but modified to work from the flanges and not the treads of passing wheels, enabling difficulties hitherto encountered with variously coned wheel treads to be overcome. This treadle is itself derived from a much older one, the leaf spring rail-contact of Baillehache, introduced many years ago on the Paris-Orleans Railway. The counting mechanism is based on the principle of a rotating magnetic field, and thus registers the passage of a wheel over the treadle in either direction, or to and fro on it, an absolute necessity at certain locations at least, if the facilities given by track circuiting are to be equalled. The various applications of the equipment and the manner in which local conditions affect them are explained, and the illustrations show the general construction of certain parts very clearly. No doubt there must be many places on the railways in this country and overseas where apparatus of this type should meet a long-felt want.

Cable Tapes and Binders.—From British Insulated Cables Limited, Prescot, Lancs, we have received a copy of a new folder dealing with the protection of Thiokol brand sheathed cables when the ends have to be immersed in oil. This protection takes the form of the application of Thiokol cement and tape, illustrated directions for which are given in the folder. Another pamphlet from the same firm gives particulars of copper, bronze, and cadmium-copper tapes and binders for telegraph and telephone circuits. These are manufactured from annealed high-conductivity wire having a minimum copper content of 99·8 per cent.

Tubular Steel Poles.—We have received from Stewarts and Lloyds Limited, of Winchester House, Old Broad Street, London, E.C.2, a useful book describing the three principal types of tubular steel poles, their respective uses and advantages, and the comparison between the first, or swaged section type, as generally used for tramway poles, and the third, or stepped type, without any joints. A chapter is devoted to the uses of the second, or multiple-section type, and other chapters deal with service conditions of poles and their design. The standard specifications for and the dimensions of poles with swaged joints are also given. Handy tables are included at the end of the book, which is well supplied with pertinent and useful diagrams. Trolley poles and standards for tram and trolleybus routes are among the types described.

XUM

THE SCRAP HEAP

An elephant that was shipped from Chicago to Denver in a baggage car amused himself and unnerved the passengers and crew by pulling the air-brake rope so frequently that the train was six hours late because of stops.—*Joseph P. Pollard in "The New Yorker."*

* * *

Despite the far-famed *Reichsautobahnen*, high-speed motorcoaches, and "flying" trains, there can still be found in Germany nearly 1,000 post chaise horses. In parts of Bavaria, for instance, there is a regular horse-drawn mail-coach service. Berlin has still 42 horse-cabs, or *droschkes* as they are called.

* * *

Six passengers aboard a Montreal-bound Central Vermont Airways passenger plane, had the unique experience recently of hearing their pilot and a fellow passenger flying 5,100 ft. in the air converse with Mr. E. W. Todd, superintendent of a gold mine at Kirkland Lake, Ont., in a shaft 1,800 ft. below the surface of the earth and more than 800 miles away. The occasion was a communication demonstration staged by the Canadian National Telegraphs in connection with a rotary club luncheon in Toronto.

* * *

"De-icers" are an important part of the new planes with which Trans-Canada Air Lines will span the Dominion. These are rubber "overshoes" on the leading edge of the main planes into which are fitted expanding tubes. By means of air pressure supplied by a motor-driven pump, these tubes are caused to pulsate and crack off any ice that may form on the wings. Behind the propeller is a hollow "slinger ring" into which a mixture of glycerine and alcohol is fed from a pump and from which two small metal tubes are led to the root of each blade. These admit a quantity of the mixture which spreads over the blades in rotation, preventing ice formation.

* * *

THE PLAINT OF THE THIRD-CLASS PASSENGER

The Pullman cars on the Brighton line
Are fair and stately, sedate and fine;
Each "First" bears proudly a lady's name,
But the "Thirds" have none, which I call a shame.
Well suited to fur-clad super-men
Are *Beatrice, Myrtle,* and *Vivienne;*
But I entrain for the Southern shore
In "Third-class Pullman-car, No. 4,"
Which gives me rather a nasty jar,
For I hate to ride in a nameless car.
Not that I sigh for the gracious names
Of high-born damsels and noble dames
But names like *Susan* or *Nell* or *Kate*
Would well accord with my humble state,
And *Nancy, Polly,* and *Mary Ann*
Ring sweet in the ear of a third-class man;
And I'd take my seat with a modest pride
In a car with a humble name outside.

[J.W.P.]

From The Laughter Omnibus. Faber and Faber, 8s. 6d.

A correspondent comments that the Departmental Ditties recited by Mr. H. W. Payne, Principal Assistant to the Chief Goods Manager, G.W.R., at the Chief Goods Manager's Office dinner on February 4 (see our issue of February 11), made no reference to the Chief Mechanical Engineer's Department. To rectify the omission he submits the following verse:—

C.M.E.

We'll say it with "Kings" or maybe with "Castles,"
Or some other class of our making;
The boilers high pressed, though well understressed,
Neither load, road, nor speed, set us quaking,
"Manors" *please.*

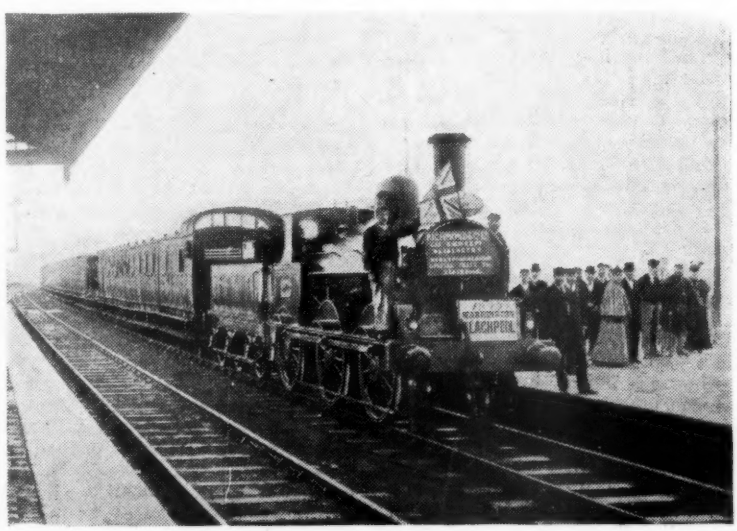
* * *

On Saturday evening last an accident occurred on the St. Albans Railway which might have proved more serious. The train due at St. Albans at 8.5 p.m. by some neglect was not stopped soon enough and would have run through into the high road had it not been for the heavy barrier which brought it to a standstill. P.c. G——, who was conveying two prisoners to gaol, was not able to attend to his duties for some days from injuries received.—*From "The Watford Observer" of* 1863, *quoted in the issue of January* 28 *last, commemorating* 75 *years of publication.*

* * *

BLACKPOOL BECKONS

Mention of the magic word "trip" to almost any Lancashireman causes a picture of the bigger and brighter Blackpool of today to float fairy-like before his brightened eyes. The lure of the Blackpool of four decades ago, though it did not promise so much in the way of sheer stupendousness as it fulfils today, exerted perhaps a more magnetic influence on a district where the opportunity for pleasure in its rare appearances—perhaps once a year—was taken with whole-hearted zest and cheerful disregard of cost. Blackpool could, even then, stretch out a finger to distant Warrington and beckon invitingly to Richmond & Co. Ltd., gas engineers of that town. A recent note in *The Warrington Examiner's* "Forty Years Ago" of a trip to Blackpool in 1897 by 500 employees of this firm, shows that large "works excursions" are by no means a railway innovation of recent years, though the luxurious way in which they are catered for by the railway companies certainly is. The note brought forth a photograph (which we reproduce by courtesy of *The Warrington Examiner*) showing the excursion bound for Blackpool about to start from Warrington (Bank Quay) station, L.N.W.R. The locomotive, proudly decorated for the occasion, was L.N.W.R. 0-6-0 goods class No. 1784. The carriages, especially the leading one with the enormous bird-cage roof, have a strange, but to many readers not an unfamiliar, appearance. Confirming their suspicions, they *are* ex-North London Railway stock—borrowed for the excursion along with an N.L.R. guard who had the duty of attending to their lighting installation. An additional guard was provided by the L.N.W.R. We are indebted to Mr. F. B. Thornhill, District Goods Manager, Warrington, L.M.S.R., for sending us these particulars, which are based on the reminiscences of William Shaw, the fireman of the trip in question, who retired a few years ago from L.M.S.R. service. The advertisements borne by the engine are almost precisely similar to those favoured for large works excursions today. It would be interesting to know if this train was the pioneer of such specials.



***Employees' excursion train to Blackpool about to start from Bank Quay station, Warrington, in* 1897**

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

CANADA

Railway Problems before Parliament

Notice of a resolution to discuss the railway problem of Canada is given in the Upper House by Senator C. P. Beaubien (Con., Montreal). The subject, however, probably will not come up for discussion for a few weeks. The resolution reads: "That the Government be urged to deal without further delay with the railway problem of Canada and finally put a stop to the ruinous loss of between $40,000,000 and $50,000,000 yearly incurred by the country to cover deficits and provide loans to the Canadian National Railways, which has already consumed more than $3,000,000,000 of the resources of the country and is responsible for more than one-half of the national debt."

The Senneterre-Val d'Or Line

This new branch, which is the first section of the proposed line to Noranda and opens up one of the new mining areas of Quebec, was inaugurated on December 6, when the first train arrived at Val d'Or with a number of Government and railway officials and a group of mining magnates. Val d'Or lies at the base of a triangle, formed by the Temiskaming & Northern Ontario, and the Canadian National transcontinental lines. The new line will form the base of that triangle, passing through an area containing many mines. From Val d'Or it will run westward to Noranda, 60 miles through the innumerable lakes and wastes of the muskeg land. At Noranda the new line will join the Nipissing division of the T. and N.O., so giving through rail communication over the district without having to go north to the transcontinental. The whole area, which has been opened up by aeroplane transport, will now be served by the railway, which will maintain communication during the freeze-up when all planes are grounded.

Sir Edward Beatty and Unification

A leader published in the *Ottawa Journal*, challenging certain aspects of unification, has evoked a reply from Sir Edward Beatty, and in his letter to the *Journal* he confirms the conviction he expressed in his speech at Windsor on December 8, that unification is inevitable. As regards the precise amount of the saving which would be realised by the discontinuance of duplicated services and other economies he replies to the newspaper criticism that it can hardly be expected that his estimate will exactly coincide with that of the then President of the Canadian National Railways, or with any other. He has taken as the basis for his figures the year 1930 as being a normal year, neither boom nor slump. And finally Sir Edward strongly dissents from the view that no scheme of unification would reduce a cent of the loss on interest charges. The whole plan is based on a division of the resultant savings on an agreed basis between the owners of the two properties and it is obvious that the Canadian National proportion would go in relief of the interest burden now carried by the taxpayer.

ARGENTINA

National Transport Co-ordination Committee

The first meeting of the Electoral Council of the above committee was held on January 7, under the temporary chairmanship of the Minister of Public Works, Dr. Manuel R. Alvarado, who announced that Señor Ricardo José Gutierrez had been appointed Chairman. The other members of the council are Señor J. Allende Posse, Chairman of the National Roads Board, who was unavoidably absent; the General Manager of the State Railways, Engineer Pablo Nogues; the Director of Navigation and Ports, Rear-Admiral José Guisasola; and the Director-General of Railways, Engineer Manuel Garcia Torre, who was represented at the meeting by the Sub-Director, Señor Arturo Noni. The railway companies and road transport concerns have still to elect their respective representatives, under the terms of the corresponding law, as set forth in THE RAILWAY GAZETTE of July 9, 1937.

Working to Rule on the B.A.G.S. & B.A.W.R.

For some time past a certain amount of agitation has been rife amongst a section of the dining car staff over the reduction of pay and dismissals alleged by their union to have been involved by the introduction of buffet service on some of the trains, to replace the customary restaurant cars. Finally, a "work-to-rule" movement was put into force on some of the local sections, and was also joined by the staff of the Stores Department. This, fortunately, was limited to a 10-minute stoppage on the afternoon of January 14, but as it was feared that it might extend to other sections of the railways, a conference of the representatives of the companies and the union was called by the Director-General of Railways. It was later announced that the companies had agreed to reinstate the majority of the dismissed men, but to discharge a small number whose records were unsatisfactory or who had been only a short time in the service. Under the terms of settlement of the dispute, the companies agreed to publish in their service orders a list of the vacancies which had been created by the introduction of the buffet services, in order that these could be applied for by any members of the staff who wished to offer themselves.

UNITED STATES

Rate Rise Decision Near

Final arguments before the Interstate Commerce Commission in the American railways' request for authority to increase their freight tariffs by 15 per cent. (and passenger fares, in coaches, in Eastern territory from 1d. to 1¼d. a mile) were heard during the first week in February. Indicative of the complexity of such a case is the fact that over 100 lawyers appeared to argue it, on behalf of an equivalent number of parties to it. A decision is expected by the latter part of February. Meantime, the decline in freight traffic, which was precipitate during December, appears to have levelled off at about 15 per cent. under a year ago.

New Coaches for New Haven

The New York, New Haven & Hartford, which already has the largest fleet of modern streamlined passenger coaches* (having acquired 150 during the past two years), has announced its intention of purchasing an additional 50 of these vehicles.

Pennsylvania Electrification

The Pennsylvania on January 15 placed in operation its new electrification undertaking between Paoli, Pa., and Harrisburg, 83 miles. This addition permits electric locomotives to be operated through from New York to Harrisburg, 195 miles, as well as from New York to Washington, 225 miles. Electrification of the line from Harrisburg along the Susquehanna river to Perryville, Md. (which will permit electric operation between Harrisburg and Washington), is in progress, as is that of the Morrisville cut-off, an avoiding line for freight trains which enables through east-west traffic to keep out of the congested Philadelphia terminal area.

Train Limit Bill

The Bill limiting freight trains to 70 cars, which was passed by the Senate at last year's session of Congress, is now before the Committee on Interstate Commerce of the lower house, and extensive hearings are being held. The train service unions are its principal supporters. Introduced into Congress originally more than a decade ago as a frankly "make-work" measure, the unions have now changed their emphasis and support the Bill solely on its alleged "safety" virtues.

At the hearings held so far, the unions have presented numerous railroad employees who allege that they have been injured by excessive shocks

[* Described in THE RAILWAY GAZETTE of June 1, 1934, page 985.—ED. *R.G.*]

XUM

developed in trains of great length. Countering this testimony, the railways are citing accident statistics of the Interstate Commerce Commission which give very little evidence of danger to life and limb by reason of long trains. They cite, instead, the heavy accident toll at level crossings, and contend that the passage of this measure, by necessitating the operation of additional trains, would increase the hazard where casualties already are numerous, and increasing.

Measures of this kind have heretofore fared well in Congress, regardless of their merit, because of the organised voting strength of the railway unions. In the present instance, however, organisations of farmers and traders are opposing the unions' programme, and it would be difficult to predict the outcome. The railways estimate that the proposed limitation would cost them about £20,000,000 annually.

A Highly Critical Period

The railway situation is approaching a crisis. With the Erie and the Minneapolis, St. Paul, and Sault Ste. Marie added to the lines in receivership during the past month, no less than one-third of total mileage is now bankrupt; and there are several other companies which will surely succumb during the current year unless traffic increases considerably, and unless higher rates produce higher revenues (by not diverting traffic to the road so that the railways do not benefit).

Chairman Wheeler of the Senate Committee on Interstate Commerce has emphasised the gravity of the situation, and announced his intention of introducing remedial legislation in Congress. The exact nature of his proposals has not been made known, but presumably they will include measures to encourage amalgamation and the elimination of competing services. How much such grouping would help, however, in view of the apparently limitless demands of the unions for "make work" measures, and the fact that there is no decline in Government spending for highways and waterways, is a question.

Competing with the Public Purse

The railways now recognise that their opponent is not the road, and is not the waterway, but rather is the public purse combined with the coercive power of the State. Meeting competition of rival agencies of transport, *per se*, is a comparatively simple problem, but when that competition has behind it the unlimited public purse, the problem becomes much more difficult. For instance, despite the fact that by the "long and short haul clause" the railways are prohibited from competing effectively with Panama Canal shipping for intercoastal traffic, Bills have been introduced in Congress to exempt this shipping from the payment of Panama Canal tolls, and to give it an operating subsidy of 8s. a ton. It is, obviously, impossible to meet competition of this kind, because it is the purpose of the supporters of these measures to keep the shipping in operation regardless of economic considerations. If a subsidy of 8s. did not suffice to this end, then it would be increased. No self-supporting industry can compete effectively against such conditions.

There is some indication, however, that public recognition of the adverse factors affecting the railroads is growing. Perhaps, therefore, they still may be corrected before the industry becomes hopelessly bankrupt. The developments of the next few weeks may decide the issue.

SPAIN

Frontier Train Service from Barcelona

The journey from Barcelona to the frontier nowadays is by no means an easy one. As there is only one train daily in the direction of Port Bou and one to Puigcerda, there is overcrowding, and long queues form hours before train time, extending from the booking office into the street. People with means pay a substitute to keep their places in the queue, but even then it is convenient to be present at a very early hour, and, despite that precaution, there are cases where people fail to get on the train and have to return again and again. The giving of tips or "inducements" is now more difficult by reason of the absence of any small change, but the way of the traveller will certainly be made easier if a supply of cigarettes is taken for judicious distribution. The train for Figueras, the nearest station for bookings to Port Bou, is timed to leave at 7.18 a.m., but at 6 a.m. the train is not only full but literally overflowing, as not only is every seat taken but the corridors and gangways and all floor space fill up to repletion. The possibility of not getting a seat is less important than it once was, partly due to the difficulty of getting in anywhere at all, but also because in many cases the carriage cushions have been removed by refugees to sleep on. The journey to Figueras, which in normal times took about 2½ hr. for the 141 km., now takes anything up to 10 hr.; there is a restaurant car and a meal is served at midday. For those who are lucky enough to get a place at any one of the "services" (of which there may be as many as eight) there is served, at the pre-war tariff of 8 pesetas, a plate of doubtful broth, a dish of an equally doubtful stew, mainly rice or beans, an orange and a very small ration of bread. The journey is really an eloquent example of travel in time of war, and obviously only dire necessity leads anyone to attempt it, especially those who have before them the prospect of the possible ordeal at the frontier.

INDIA

Sind-Gujerat Railway Prospects

In reply to a question in the Central Legislative Assembly, Sir Thomas Stewart, Hon. Member for Communications, stated that according to the last survey report, the Sind-Gujerat Railway connection could not be expected to earn a return of more than 2·2 per cent. on the estimated capital cost of construction.

Kumbh Mela Work at Hardwar

The East Indian Railway authorities have made elaborate arrangements for the satisfactory handling of a huge pilgrim traffic during the Kumbh Mela at Hardwar. A new platform, 1,000 ft. long and 40 ft. wide, has been built. Improved passenger shelters and a large number of exits have been provided. Four additional temporary platforms have also been put up. The usual travel concessions granted on such occasions will be modified so as to enable the pilgrim to remain longer at the sacred town without the risk of the expiry of his return ticket.

Railway Budget

The Standing Finance Committee for Railways met at New Delhi on January 27 and 28 and completed its scrutiny of the budget proposals prepared by the Railway Board. It is understood that the various railway demands have been approved by the committee. The construction programme for the coming year, it is reported, will include the Sind Right Bank Feeder Railway. Provision was made last year for the inception of this scheme during 1937-38. Certain negotiations with the Sind Government, it is gathered, have held up this work. The Sind Government having now undertaken not to construct parallel roads, the construction will be taken up next year. The scheme includes the purchase and conversion to broad gauge of the existing narrow gauge line from Larkana to Dodapur, owned by the Sind Light Railways Company, and the extension of the line to Jacobabad. The total cost of the scheme was last year estimated at Rs. 91 lakhs. This line is considered necessary in order to facilitate the movement of increased agricultural products in the areas opened out by the Lloyd Barrage.

The total approximate gross earnings of all State-owned railways from April 1, 1937, to January 20, 1938, amounting to Rs. 74·47 crores, exceed the actuals for the corresponding period of the previous year by Rs. 292 lakhs. the increase over the previous year has been reduced by Rs. 47 lakhs during the first two periods of January. It is thus probable that the financial year will close with the gross earnings very much below the augury of the first six months.

THE RAILROADS' "FORGOTTEN MAN"

An American plea for the ordinary stockholder

The following article is reproduced from the January 29 issue of our U.S.A. contemporary, the "Railway Age." We have reprinted the text cross-heads, and spellings as in the original.

IT is remarkable how men once influential and well known can lose their influence and be forgotten. There is a man formerly influential and well known in the railroad industry who, during recent developments importantly affecting the industry and him, has hardly been mentioned. He was hardly mentioned during the negotiations that resulted last summer in advances in the wages of all railway employees to a level higher than before the depression. We believe he has not been mentioned in the hearings in the rate advance case pending before the Interstate Commerce Commission. We are quite sure he had not and will not be mentioned in the hearings occurring before the House Committee on Interstate Commerce regarding the bill largely to increase railway expenses by limiting the length of freight trains.

This man, formerly so well known and influential in railroad circles, is the owner of the railroads—viz., the railroad stockholder. Various reasons were given last summer why advances in railway wages should or should not be made, but we do not recall that their probable effect upon the stockholder was emphasized. There was much discussion of the wishes, "rights" and interests of labor unions and railway employees; of industries from which the railways buy; of the shipping and traveling public; and even of bondholders; but almost none regarding the wishes, rights and interests of the stockholder. He is merely the owner of the railroads, and, therefore, no doubt, is not entitled to much consideration as compared with any other interested party.

The Rate Case and the "Forgotten Man"

The stockholder has hardly been mentioned in the hearings regarding advances in rates because the spokesmen of the railways consider it would be bad strategy to do so; and they are right. Advocate advances in rates to enable the railways to pay dividends to their owners! That would certainly be to disregard and defy prevailing economic beliefs and principles. No industry, according to these beliefs, and principles, should be run any more even incidentally to earn dividends for its owner; and this is especially true of the railroad industry. It should be run solely to pay high prices asked by the coal mining and other industries, high taxes levied by government and high wages to employees. It should not be allowed even to earn interest on its debts if this will interfere with payment of a "cultural" wage. Spokesmen of the railroads know better than to intimate in a rate advance case that railways managers might like to earn something to pay to their employers, the owners of the railways.

Likewise in the hearings regarding the proposed train limit legislation. This legislation is opposed upon the ground that it would increase accidents rather than safety; that it would increase operating expenses and make necessary either higher rates or less railway buying of equipment and materials and consequent impairment of service. But mention that it would cause waste of money that might possibly otherwise be paid to the stockholders? By no means. That would be "placing property rights above human rights."

Human Rights Above Property Rights—If Any

According to the present accepted social and economic philosophy, property rights are not human rights; every human right is superior to every property right, if any; and, therefore, you must not consider any property right at all if there is any human right of which you can think that might be opposed to it. And, of course, there always is one.

But being very old-fashioned in our ethics and economics, we venture to believe that this neglect and disregard of the railroad stockholder is being carried too far. He might some time begin to be bored by it. He might some time begin to believe that he is entitled to more attention at least from the managements of the railroads for, after all, they are supposed to work for him. The writer of this editorial is a stockholder in several railways. He has had no evidence for years, excepting one, that the managements of any of them know it. This one evidence is that he receives each year copies of their annual reports and proxy blanks for him to sign. The reports for some years have been extremely poor; but he has no evidence that the managements are worrying much concerning what he thinks about that. The available evidence indicates that they are worrying much more about what government officials, labor leaders, employees, shippers and travelers think. Perhaps they worry about what the large bondholders think; but there is not much evidence that anybody is worrying much about what the owners—*i.e.*, the stockholders—think, although the owners themselves are worrying a great deal.

Taxes Seven and a Half Times Net Income

Why they are worrying is easily indicated by statistics regarding what their railroads have earned within recent years and by the prices of their stocks. Net income is the amount available for paying dividends. The railroads as a whole earned $135,000,000 net income in 1931; incurred net income deficits of $139,000,000 in 1932, of $6,000,000 in 1933 and of $17,000,000 in 1934; and earned net income of $8,000,000 in 1935, $165,000,000 in 1936 and about $88,000,000 in 1937. The total net income earned in these seven years was about $234,000,000. The railroads have about 71,000,000 shares of stock outstanding in the hands of the public. Their net income in the entire seven years, therefore, was about $3.30 a share, or an average of 47 cents a share annually.

In the seven years mentioned the railroads paid $1,761,000,000 in taxes. This was seven and one-half times as much as the amount of net income they earned for their stockholders. While they were earning an average of only 47 cents per share of stock annually for their owners, they were paying an average of $3.54 per share of stock annually in taxes. Why should anybody favor ownership of the railroads by government as long as the local, state and national governments collect $7.50 from them in taxes for every dollar they earn for their present owners?

Stockholders' Investment in Railroads

The attitude toward capital that prevented recovery and caused the recent severe recession of business could

XUM

not be better illustrated than by the fact that it has become bad form for spokesmen of the managements of any industry to mention its stockholders and why their stockholders' interests, much less their "rights," if any, should be considered by those determining the economic policies of government, business and labor. Because of the large indebtedness and fixed charges of the railroads this is especially true of railroad stockholders. But it remains an easily demonstrable fact that, besides being legally their owners, the stockholders of the railroads have an equity of billions of dollars in them.

A large part of railroad investment has been made from capital derived directly from the sale of stock. Another large part of it has been made from net income that belonged to the stockholders and might have been paid to them in dividends, but was instead invested in the properties to increase their ability not only to render public service but to earn dividends. There are probably one million individual owners of railroad stock; and practically all of the present owners bought and paid for their stock relying upon railway managements and government regulating authorities to earn and allow to be earned enough net income to maintain its value as well as the value of other stocks was maintained.

Their reliance was badly misplaced. The Dow-Jones averages are for 30 industrial and 20 railway stocks. In 1906, when effective railway regulation began, the highest average reached by the industrials was $103, and by the rails $138. The highest averages reached in 1916 were: industrials, $110 and rails, $112; in 1926, industrials, $167 and rails, $123; in 1936, industrials, $185 and rails, $60. The averages on January 22, 1938, were industrials, $130; rails, $30.

It is agreed on all hands that as recovery occurs, and as one of the essentials to recovery, there should be made a large investment in railroad properties. It is agreed this should not be made from capital raised by the issuance of interest-bearing securities, because the indebtedness and fixed charges of most railway companies are too large now. It is agreed that it should be made from capital raised by the sale of stock, or from net earnings, or from both. But plainly it can not be made from either or both unless and until net income per share of stock becomes at least ten times as large as it has averaged during the last seven years.

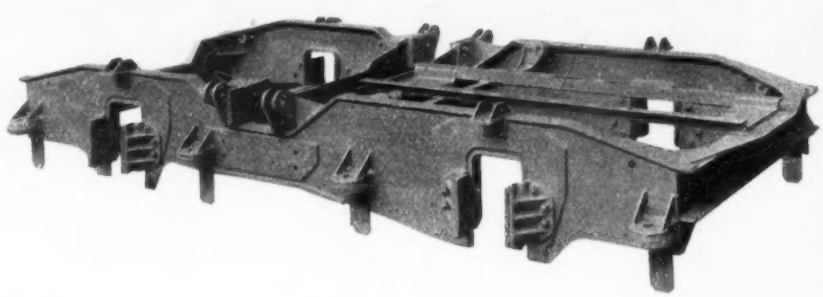
Organize the Stockholders!

Why should industrial stocks now be worth 26 per cent. *more* than in 1906, and railway stocks be worth 80 per cent. *less*? The steady attrition almost to destruction of the value of the railway owner's interest in his own property is the worst economic crime of the last third of a century in this country. It is high time that the stockholder should cease to be the "forgotten man" of the railroad industry. Experience has demonstrated that the managements that are supposed to be employed by him cannot effectively defend him. Therefore, they should adopt the measures necessary to enable and encourage him to defend himself. The virtual destruction of the value of his stock has been due to group pressure that the managements have been unable effectively to resist —pressure from different groups for lower rates, higher wages, higher taxes.

There should be organization of the stockholders that would enable them effectively to exert group pressure for themselves. There are about equal numbers of railway employees and railway stockholders. When the latter are organized nationally and locally like the former it will be no longer possible for railway labor leaders virtually to dictate their own terms to politicians and railway managements at the expense of railway stockholders. Experience having demonstrated that railway managements cannot, without the organized help of the stockholders, effectively protect the interests and rights of the legal owners of the railways, it is the plain duty of the managements to take the steps necessary to enable the owners of the railroads to organize and fight in their own defense.

Welded Bogies for New L.P.T.B. Stock

A FEATURE of the new surface line stock now being constructed by the Gloucester Railway Carriage and Wagon Co. Ltd. for the London Passenger Transport Board, is the welded bogie frames, of which we gave drawings with our description of the stock in the Electric Railway Traction Supplement of September 17 last, pages 498-502. We now reproduce a photograph which clearly illustrates certain advantages of welding for this type of construction. The solebars consist of ½-in. plate with 3½-in. × ¾-in. flange bars welded to the top and bottom in the centre of their length. The top flange is continued through the length of the solebar as a 3-in. × ⅜-in. flat bar. The solebars are reduced in depth at the centre to allow the bolster to project sufficiently for its suspension to be carried outside. The top portion of the main transoms, of ¾-in. plate, are extended beyond the solebar, and with the addition of a bracket form the swing link bracket. The solebar flange is connected to the transom by a shaped gusset ¾-in. thick, designed to effect a gradual change of section of the solebar at this joint. The headstocks, of 8-in. × 3-in. channel, are welded to the solebars, and have shaped gussets at the joint connecting the flanges of the two members so as gradually to merge one member into the other. The spring brackets, spring stops and all brake brackets are welded to the solebars and stiffened by means of welded ribs where necessary. The solebars are stiffened by a welded flange running round the inside of the axleguard, and also by a ½-in. plate welded to the outside of the web. The new London Transport surface line stock was described on September 3.



Bogie frame for 1938 surface line stock, L.P.T.B.

TRAFFIC RESEARCH, G.W.R.

A thesis on the problem of winning the patronage of the trader

By H. W. PAYNE, Principal Assistant to Chief Goods Manager, Great Western Railway

RESEARCH.—*Diligent inquiry or examination in seeking facts or principles; laborious or continued search after truth; investigation. v.t. To search again; to examine anew.—Dr. Annandale's "Concise English Dictionary."*

THE article on Railway Research in your issue of February 11, prompts a more particular reference to that side of the subject which has commercial problems for its purpose.

Commercial problems are many and various from the railway point of view, but all crystallise in the motive of securing business.

They are inherited by the railwayman where experience dictates self-improvement. Not seldom, or ought it to be admitted more often, the complaint of the customer stimulates a new conception of things due for betterment and there is, critics apart, an automatic movement towards needful reform.

This is nevertheless a negative outlook by contrast with a forward policy in the market place due from the railwayman in the interests of his business. Nothing could be more urgent in his commercial activities which, translated for the purpose under notice, is ability in getting traffic upon terms of rate and service, of every description, in the face of competition.

These observations are confined to the freight side and what follows illustrates an application of the dictionary definition given above.

The use of the definition, not excepting "diligent," is to become descriptive of a present effort "to examine anew" a situation which, with due allowance for additional business in later years, is still one of acute competition and steady loss of tonnage and revenue, especially revenue.

There are routine ways sanctified by long usage of keeping in contact or preserving good relations with traders, but in spite of these laudable efforts the challenge of competition has found us wanting in the one thing needful to retain patronage. That one thing, in nine cases out of ten, is price.

The railway rating system for good and sufficient, not to say expedient, reasons has had to be slow by comparison with other price fluctuations in reacting to the demand for adjustment.

Tentative reductions allied to commodity tonnages have been and are made on an assumption that given trades react in the mass to lower transport costs. This is only partly true for it is not evident that any industry acting in concert as to price control or sales purposes imposes control upon the price paid for transport by its component members.

Experience points to the conclusion that within the scale of transport costs the opportunities for profit making on the complete sales transaction are not negligible, and while leaving this for consideration in some later and final determination as to the economics of charges, the student of railway traffic research is forced to the conclusion that commodity headings are only one and not the best guide to knowledge.

The field of research is vast and several approaches to the facts of the situation present themselves as superior to that of the less direct value of compilation of statistics already touched upon.

The railway system has all traffic for its province and, equally so, is vulnerable to loss of every description by competition. Moreover, the knowledge of such a loss, discovered by the disappearance of traffic formerly carried and the pursuit of inquiries as to reasons why, is not the whole story; new business between two points can develop and nothing be known of it but for the periodical inquiry of the trader at one end or the other with the firmly established reticence in divulging competitive rates as additional embarrassment.

An all station census, designed to bring the best information to light, demonstrated the paucity of facts. What came to hand was obviously ill-informed and inadequate. The element of ignorance as to, first, what had been taken away from the railway, and, second, the whys and wherefores, is disconcerting.

It is pertinent again to touch upon the slow evolution of the rate-reducing mind from the intro-active difficulties surrounding the problem of competition where conditions circumscribe liberty of action on the one side, while full liberty obtains on the other to exploit or create existing and new opportunities.

We begin, therefore, with a desire to stimulate interest from a new angle. The compulsory diffidence gives place to invention, for even now it is not too late although much mischief has been done.

The psychology of curiosity and enquiry is undergoing revival, and as appetite comes with eating, so beginnings of enthusiasm come to full glow with a concrete piece of information of business open to bargaining with the encouragement of the transaction becoming railway in preference to a competitive method; it being remembered that the will of the trader is here and is the decisive factor.

Of the numerous facts ascertained with "laborious or continued search," it is found that the broader ideas of present-day railway policy can bring about recovery of loss. In other words, competitive opportunities are being made and the business, open to tender, usually the lowest, can be secured.

There is no rate war. History might condemn lack of initiative, however.

The long and short of this fresh enterprise is that the railway has tremendous leeway to make up with regard to carryings lost by competing methods. We are not stopping to dilate upon or complain about such methods. What still remains to be said on the rates side is that we can find expedients well within the structural limitations of the system to adapt them to modern demands.

This is not a departure from legal obligations but a newer commercial sense beginning from within the entrenched conservatism of a system designed for protection of the standard revenue and failing thereat for reasons too well known.

Only a part of the present scheme is active. We are still obsessed by the absence of facts, and although the spirit of acceptance of the inevitable as hitherto conceived is disappearing, there is still lamentable ignorance of what is going on.

We have considered and are taking ways and means by which the business activities of towns upon the system are being measured by using facts culled from routine records added to the accessible knowledge obtained by intensive acquaintance with the industries and their

managements of a given place. The larger the town the greater the problem. By delving, new ground is turned over, the discoveries examined and placed in juxtaposition to the present readiness to take a hand in any or all of the transport on terms.

It will be seen that this is looking first at the trees and seeing the wood in proper perspective afterwards for it is abundantly demonstrated that an individual trader must be met on his own ground. True he often brings us face to face with larger policy, but it is equally true that his interest can be aroused and that he can be surprised that the railway still exists for him.

The rates question predominates. It used to be said with some complacency that service was the best recommendation. That is not so today. The importance of service is not ignored, it is an integral part usually of negotiations. It may be types of wagons used for the commodity; times of delivery; methods of handling; questions of packing and damage; a petty grievance as to the non-settlement of a claim, and any and all of the business irritations which create prejudice unfavourably.

All must be put into the pot for a rehash of the new relationship. The new brand of negotiator forgets that the principle of establishing good relations is the only claim upon him. The old idea worked very well when only the railwayman called. Today he must go with the offer of a price and be prepared to reduce it. He must be able to perform everything he promises and be ready with a number of promises, and above all he must know, first, the true meaning of the word "Research." He has put his head in the lion's jaws "to search again."

The office detail is necessarily large but is essential to the preparation of the matter upon which the research executives base their work. The district officers are contributory with facts gathered from the individual stations. Co-ordination is set up by a cycle of periodical meetings with the local people on their own ground, and is further intensified by headquarters' representatives visiting selected firms.

Research, drawing from all sources of knowledge, divides by investigation and multiplies by interest. Research will seek to be an eyewitness and always a cross-examiner. Is dissatisfied until the money is earned and paid.

The results have more than justified the expense, and the more gratifying is the yield from the "difficult" trader.

This is a method of recovery conditioned by the recent utterance from an exalted and withal combative quarter relating to the amount to be done and the shortness of time in which to do it. From present success with new contrivances the necessity for further examination and application of means to ends appears another way of saying that the more efficient the organisation the greater the profit.

Certainly there is every encouragement to believe that the modern traffic research organisation which is ready to discard old and unfruitful approaches for enterprising new ones augurs well for the future of at least one company.

The Simplon Line

FROM an illustrated pamphlet recently issued by the Publicity Office of the Swiss Federal Railways, we have extracted the following interesting particulars regarding the famous Simplon line. At a time when the construction of the Mont Cenis tunnel had scarcely been put in hand, when the plan for laying a line over the Brenner was still being discussed, and the Gotthard had entered the lists with a Swiss eastern Alpine Railway scheme, the Simplon had its plan for a direct tunnel. However, at the time of its realisation the other schemes had long since been brought to fruition, for the Mont Cenis line had been open nearly 35 years, the Brenner almost 40 years, and even the Gotthard already 25 years. This was due partly to the fact that the Simplon tunnel, with its length of nearly 20 km., presented greater difficulties than were encountered in the case of any other shorter tunnel. The first plan for a low-altitude tunnel, which provided for a length up to 16 km. in which shafts could not be sunk, originated in the sixties of last century; a plan was also put forward in 1875 by Louis Favre, the constructor of the Gotthard tunnel. The plans first assumed a definite shape in 1891, when the feeder lines came under a single control. The Jura-Simplon railway drew up a scheme which provided for a low-altitude tunnel 20 km. in length, with an approach line of $2\frac{1}{2}$ km. on the northern side and an approach embankment of $19\frac{1}{2}$ km. on the southern side, from Domodossola to Iselle, with a maximum gradient of 20 per cent. In September, 1893, a contract for the construction was signed, and on November 25, 1895, the Swiss and Italian Governments drew up an agreement covering the various aspects of construction, operation, and subsidy. The work was begun in October, 1898.

The construction was fraught with considerable difficulties which, on the one hand, originated from the high temperature of the rock—this attained 50° C.—and, on the other hand, from the powerful hot springs which were encountered, and, again, because of the enormous pressure of the overlying rock masses. On the southern side a 42-metre layer of micaceous lime necessitated the cessation of machine boring and nearly seven months were spent in penetrating this layer, while another eighteen months were required to reinforce it with masonry. Finally, the work of driving the tunnel on the northern side had to be abandoned, owing to the influx of water.

The main gallery was pierced on February 24, 1905, at a distance of 9,385 metres from the southern exit, and on June 1, 1906, the line was opened to public traffic. The total cost of the tunnel, together with the parallel gallery and the installations, amounted to nearly 65 million francs. The tunnel, which is 12 miles 560 yards in length, is still the longest in the world. In 1912, the parallel gallery was converted into a full-size tunnel, and it was put into service ten years later, the work having unfortunately been delayed owing to the world war. Since that time, the original three-phase electrical equipment has been converted for single-phase alternating current of 15,000 volts at $16\frac{2}{3}$ cycles, and the approach line to Domodossola has also been electrified, so that now the heavy locomotives of the Swiss Federal Railways can run through from Vallorbe to Domodossola. Actually the Swiss-Italian frontier is crossed midway in the tunnel, but the line is worked entirely by the Swiss Federal Railways.

The Simplon is essentially a medium for traffic between north-west and south-east. This is evident from the nature of its express services, comprising—in the case of through international traffic—the two-class *de luxe* Simplon-Orient-Express, which links up England and Paris with Milan, Venice, Trieste, Belgrade, Bucharest, Sofia, Athens, and Istanbul, and, by its extensions known as the Taurus-Express, with Turkey-in-Asia, Palestine, Syria, Iraq, Iran (Persia), and Egypt. Moreover, the Simplon line has important connections to Genoa, Rome, and Southern Italy, as well as to Brindisi, for Athens, Egypt, and India. Since the opening of the Lötschberg railway, in 1913, important connections from the north, which have lately been improved in the direction of the French Riviera exist at Brigue.

CONSIDERATIONS ON THE WORK OF THE SIGNAL ENGINEER*

A survey of layouts and signalling problems

By G. H. CROOK, Chief Assistant to the Signal Engineer, G.W.R.

ANY institution such as the Institution of Railway Signal Engineers is expected to concentrate on its specialised subject, in this case signalling—or, perhaps more narrowly, railway signalling. It should, however, be aware of the danger of excessive exclusiveness, often condemned in the past, team work being the modern idea. This has not been lost sight of; attempts have been made to arrange joint meetings with other bodies and joint discussions have been mooted. It is to be hoped that in the future more will be done in this direction. Like many other similar institutions this is a free body, and, bound only by some small conventions necessary in all societies, possesses practically unfettered liberty of expression regarding technical issues, problems, theories and practice, an extent of freedom hardly to be expected under any subsidised arrangement. Railway companies have their own committees or inter-company committees for dealing with principles, practices, problems and general considerations which may be said to be their personal or private business. Apart from this and other reasons, one need only reflect upon the very considerable and esteemed membership, scattered all over the world, to appreciate the overwhelming difficulty there would be in any organisation less independent than the existing one.

The bulk of our signalling systems rest on the permanent way and its detailed ramifications of switches, junctions, crossings and elaborations of those units. Interlocking has sometimes been stated to be the foundation of signalling, but may rather be regarded as a principal factor of signalling safety. Our visual signalling system should be regarded broadly as a reflector of the permanent way, both as to form and occupation, and as an attempt to convey its conditions to the engineman's mind. The evolution of the permanent way has recently been the subject of much research by Mr. Charles E. Lee, Assistant Editor of THE RAILWAY GAZETTE, who suggests that it really goes back to Babylonian times. The development of our present complicated layouts has, however, occurred within the last fifty years or so, largely as a result of increase in the number of station platforms, enlargement of yard accommodation, and multiple lines, all of which immediately affect the signalling equipment; special division of sections between stations, &c., has also to be considered, but is a different problem.

Station and junction layouts in their detailed arrangement depend upon a multitude of conditions. The physical conditions, such as rivers, valleys, mountains and land contour were pre-existent, and developmental conditions due to man, the grouping of busy towns, of factories, villages, ports, &c., must now be added. Then commercial influences necessitate more accommodation at some places and involve more points and crossings than at others, while, frequently, where accommodation is most urgently required it is often most difficult to obtain or arrange. Important and busy terminal stations surrounded by valuable property form a ready example, where the greatest efficiency in layouts, giving the utmost flexibility and capacity, is demanded.

All layouts, from the simple crossing loop to the principal junction, or huge terminal, are really aggregations of a few simple units, the single switch (two of which make a crossover), diamond crossings, to which may be added slips, forming single or double compounds, and interlaced crossovers, forming the scissors crossover. Another familiar unit is a crossing between pairs of unidirectional lines crossing an intermediate line, and usually laid in duplicate to provide for parallel movements. This arrangement again can be interlaced on the principle of the scissors crossover, forming what is sometimes described as a double scissors crossover, a very elaborate piece of work and subject to some constructional limitations with respect to interspacing of tracks, &c. The scissors crossovers may, with certain limitations, be combined with compounds. These components are stock items for building any required layout, but in practice much important detail enters into the design and construction of such switch and crossing work, and there are inevitably many points of contact between permanent way and signal engineers not touched on here.

Apart from its form, the position of a unit can have a very important influence on operation. Fig. 1 shows a

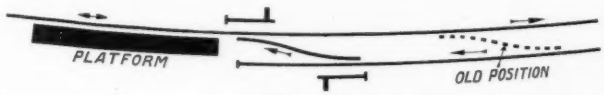


Fig. 1

busy suburban double-line terminating in a single platform, signalled for automatic working to give a two-minute service. A river prevented the construction of another platform. The crossover, merging double into single line, was situated some considerable distance from the platform. The minimum interval between successive trains is the running time from sighting the home signal to stopping in the platform, discharging, reloading, starting, accelerating, and clearing the crossover. The total interval exceeded the headway of the running sections and became the limiting factor determining the capacity of the line. This was rectified by relocating the crossover very near the platform so that incoming trains worked much closer to it and the clearing point for outward trains was attained correspondingly earlier, approximately one minute per train being saved.

A further instance affecting position only is that of crossovers or connections sometimes laid between station platforms. Their proper position is outside the platform (dotted), the starting signal can then protect any movement over the crossover (Fig. 2). Another instance is that of a crossover laid in advance of a facing junction (Fig. 3).

Fig. 2

Fig. 3

* Abstract of presidential address delivered before the Institution of Railway Signal Engineers on February 23.

The *X*—*Y* movement requires three shunts, but if the crossover is laid in rear of the junction (dotted) is possible in one shunt. This position is also equally convenient for the *Z*—*Y* movement. In some old work connections appear to have been provided somewhat haphazardly, although this may be partly accounted for by the growth of other adjacent work. On the other hand, theoretically efficient positions cannot always be attained on account of track obstructions, *e.g.*, bridge girders between tracks preventing work being laid in the most desirable positions.

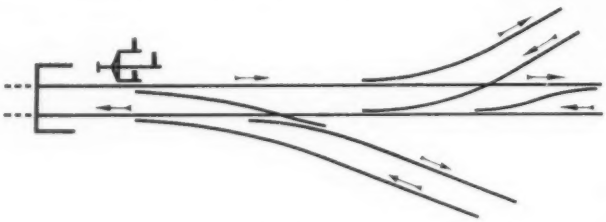


Fig. 4

Facing points at a tunnel mouth afford another example. The crossover would generally be kept outside the tunnel, otherwise, apart from engineering objections, the facing point signals would have to be inside, involving another difficult problem. The best compromise is therefore made taking everything into account (Fig. 4).

A characteristic of some old layouts is the prejudice that existed against facing points, emphasised by Mr. R. S. Griffiths, Past-President, in his lecture "A Chronological Record of the Protection of Facing Points."* By no means unwarranted, this no doubt goes back to days prior to facing point locks and bars, track circuits, and complete detection, a modern requisite. One example is a siding connection with a single line crossing loop where, in order to avoid the facing point, the connection on the up side crosses the up line to a trailing point in the down

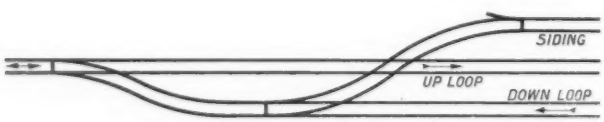


Fig. 5

Fig. 6

line (Fig. 5). In several cases the arrangement has been modified by connecting the siding direct by means of a facing point, as indicated in Fig. 6. Another example refers to double lines where the diamond crossing and trailing point were replaced by a facing point (Figs. 7 and 8). No signalling provision is made for direct movement from the up main line to the siding, as obviously the engine could not be disposed of. The movement from the siding to down line now takes place over the crossover. Sketches of junction and connection switch work are apt to be very deceptive in conveying the amount of engineering work involved, even to those engaged in signalling, while to the operating department the deception may even be greater. In new works, of course, costs

* Delivered before the Institution on December 16, 1936.

are bound to tell their tale. A stroke of the pen may represent a junction diamond crossover, &c., but in practice much expensive work is represented, rails, chairs, guard rails, and heavy timbering, apart from the inevitable signalling costs. It is therefore most important that in all layouts, apart from their being thoroughly efficient in form, the existence of each and every com-

Fig. 7

Fig. 8

ponent should be fully justified. Should some part be redundant, it will carry both wasted engineering costs and unnecessary signalling expenditure.

The utmost simplicity consistent with efficiency should be the aim of the track designing engineer. A simple example in this respect is that of siding connections, often found in old work, using a double compound (Fig. 9) instead of separate switches (Fig. 10), whereas the latter

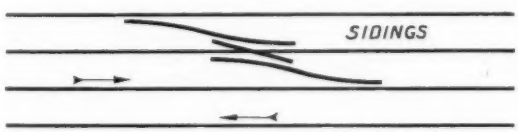


Fig. 9

Fig. 10

Fig. 11

Fig. 12

are generally better for the civil engineer and signal engineer to handle, but lack of space may make the compound necessary. Similarly, two separate crossovers (Fig. 12) may generally be regarded as simpler, and usually less expensive, equipment than a scissors (Fig. 11), but there are limits to which such separation can be taken; it is obvious that special fittings, such as scissors crossovers and compounds, were developed early to save space and, in a series of connections, obviate too many sinuous movements. In one case where separate crossovers

Fig. 13

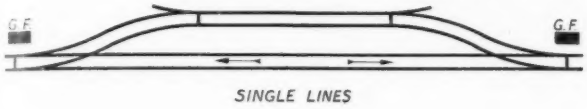


Fig. 14

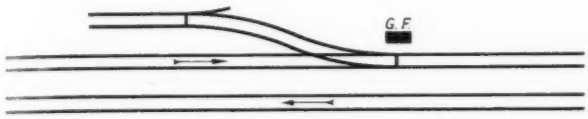


Fig. 15

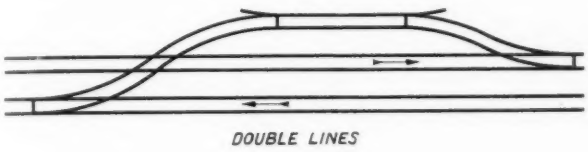


Fig. 16

were contemplated starting signals would have been required on a platform, and would have shortened it for working purposes. Scissors crossovers were therefore substituted.

A familiar, simple layout is an intermediate siding connection—often a trader's—in a section. On single lines, Figs. 13 and 14, this can readily be protected by staff-locked ground frames without signals and in Fig. 14 tail traffic can be disposed of in either direction. On double lines the old arrangement was to use home and distant signals and block telegraph, but in Fig. 15, where the siding connects with one line only, the modern method is to lock the siding electrically with the section signal in the rear. Tail traffic can thus be accommodated only from trains in one direction, but it is sometimes necessary that it should be workable from either, as in Fig. 16, when additional complication arises. The connection may be used only once a day, or less, and if section division is required considerable economy would ensue by following similar lines to that of the single connection, so far as signalling is concerned, *i.e.*, working by ground frame. A fully equipped block post is expensive, with locking frame, block telegraph, repeaters, proving devices, electrically released signals, telephone, possibly automatic train control, &c., which may be practically inert for most of their life. Fig. 17 illustrates where a site was wanted for a central signal box, displacing three others, and the only reasonable one giving views for the supervision of shunting, &c., was at the end of a platform in a position occupied by the usual trailing connection with slip. The layout was therefore modified as shown, with facing connection in the down line and the crossover moved to the

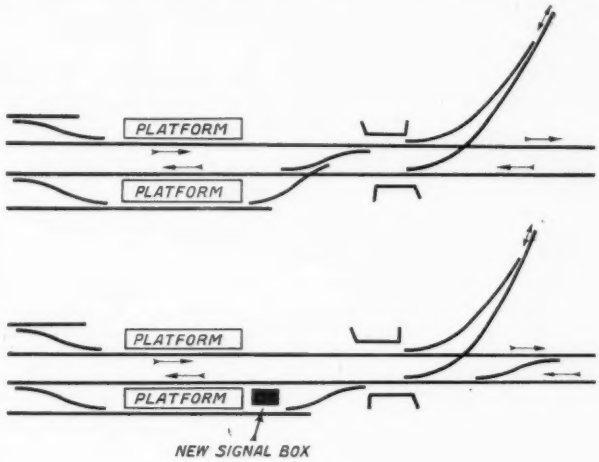


Fig. 17

rear of the junction. The junction points lead to a single branch line worked from either platform.

Large layouts are amalgamations of small units skilfully placed to meet varying local conditions. An arrangement often favoured on the Continent, sometimes referred to as the "grand crossing," not unusually interlaced in opposite directions, is seen in Fig. 18, representing a small portion of Brussels Nord station. One difficulty confronting the signal engineer is providing intermediate signals on a long succession of double slips, and here double slips have at times given place to separate single switches, to

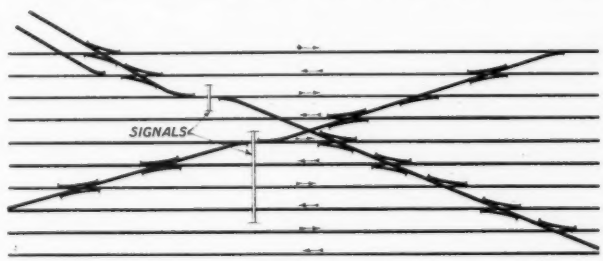


Fig. 18

enable intermediate signals to be more easily applied. Another, and very large, example of parallel and reversed crossings is to be seen at Milan.

Figs. 19 and 20 show layout of two British junctions. Fig. 19 is perfectly orthodox, with fast running junctions

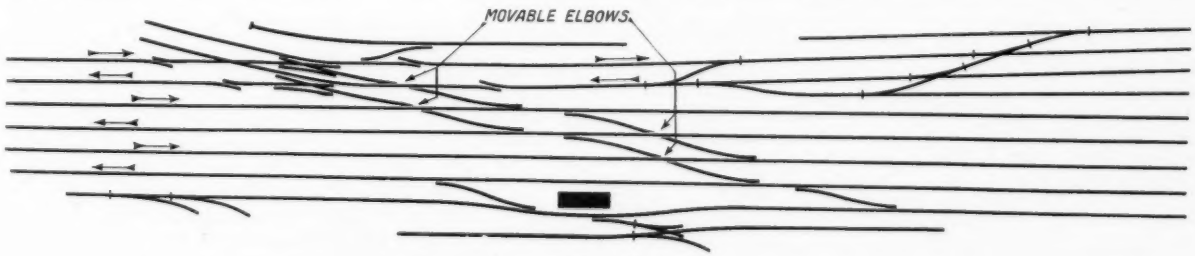


Fig. 19

with movable diamonds, for speeds of 40 m.p.h. and over. Fig. 20 has similar junctions, but intervening is a single long ladder, a slightly unusual feature. The object was to save elongating the switchwork to such an extent as to necessitate some power points. In this case all are mechanically operated.

Fig. 21 shows concentrated layout in a relatively small area, Paddington departure, permitting of several parallels, either on the straight or over the crossings, and of course many combinations and alternative routes. Originally, it was contemplated that nearly all the diamond crossings should be double slips, but on careful analysis some were eliminated. A layout like the lower portion of Brussels Nord (Fig. 22) obviously begins to resemble a draughtboard in the number of possible combinations, and if fully equipped with double slips would involve great signalling complication and expense. In this case double slips are relatively few, otherwise the complication would have been well-nigh overwhelming. Doubtless operating departments would like all layouts given the flexibility of a skating rink, but the financial factor usually enters long before that stage.

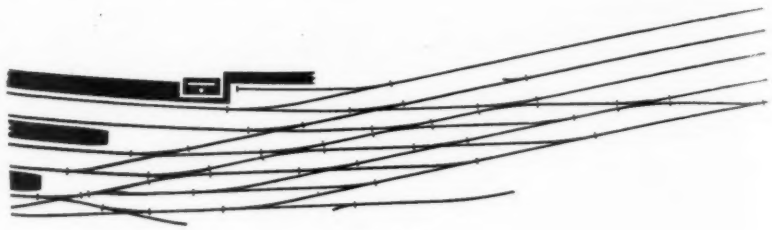


Fig. 21

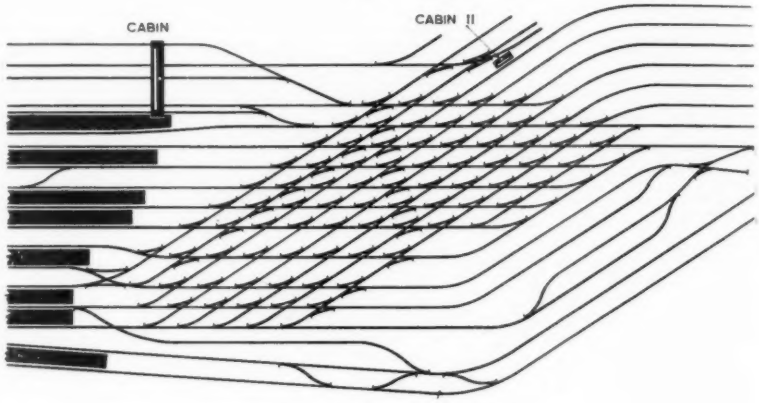


Fig. 22

Peculiarities in many layouts are partly due to restrictions but are often the result of evolution, such as some distortion made to avoid the signal box, or some other structure, *e.g.*, water crane or tank. Some of the worst complications and peculiarities in non-standard layouts are to be found in the vicinity of large factories, collieries, docks, &c., where the designer of old appears to have been baulked by nothing. From the point of view of standardisation many of these old fittings must be a nightmare to engineers.

Two very important station layouts, widely separated geographically, viz., Edinburgh (Waverley) and Melbourne (Flinders Street) possess the fortunate common factor of not being strictly terminal stations, although numbers of trains terminate, or are divided and remade; if necessary, however, trains can be *passed onwards*, a valuable facility at Flinders Street, which probably handles the heaviest surburban traffic in the world for a single station. These stations possess the basically ideal layout, which unfortunately it seems now too late to apply to the world's largest terminals. Flyover and burrowing junctions save the fouling of lines which otherwise would be crossed, but are relatively expensive and subject to many physical limitations. Where practical and economical they combine with ordinary surface layouts to form interesting examples of track work.

A striking example of the evolution of layouts is to be found at Bristol, only small improvements having been made there since 1870 until recent years, although it was known that drastic additions and alterations were necessary. Costs, however, appeared prohibitive. From 1929 to 1934 Temple Meads station was remodelled, additional lines provided, and a large area modernised, with assistance under the Government development plan. Much work was needed to arrive at the final scheme, double scissors crossings being got in, in one case, literally by inches, involving some fine survey work.

The arrangement of junctions and connecting work, involving enormous costs for construction and maintenance, is inseparable from signalling and interlocking problems. The signal engineer is in a position to predict the effects of traffic movements and suggest rearrangements that might expedite and simplify movements, and in some cases even economise switch work. A high degree of co-operation between the operating and engineering departments is essential to securing the best results. No hard and fast rules are possible; every location must be considered on its merits. Great, drastic changes seldom occur, but limited opportunities sometimes arise with renewals or relaying which should always receive careful review in the light of possible modernisation, though here again there are restrictions, such renewals generally being carried out piecemeal.

One cannot but view with apprehension the possible effects of the constantly increasing illumination of public

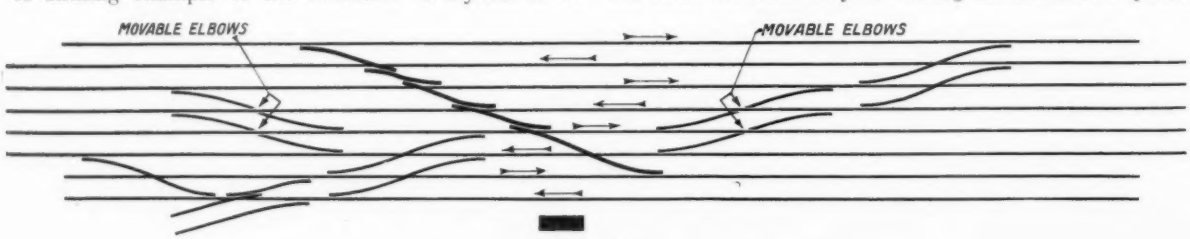


Fig. 20

roads, adjacent to running lines, frequently with lights of greenish hue, coupled with the blaze of illuminated advertising signs, often a jazz-like jumble of nearly all the rainbow colours, with red predominating. The colours red and green—possibly also yellow—should be held sacred to transportation on land, sea, and air. On the railway long years of practice have almost claimed these colours as a birthright. Train drivers should be protected in every reasonable way from extraneous influences tending to divert attention.

Another difficulty for the railways is that of overhead power wires crossing their systems, necessitating frequent breaks in their aerial telegraph, telephone and signalling line wires. Power distribution systems are only in their infancy and we do not know all the potential dangers which may arise in the event of breakage of the conductors. The general practice where E.H.T. (132-kV.) conductors cross, or closely parallel, the railway, is to cable the railway wires for such distances as will clear risk of danger or inductive interference. Railway telegraphs are thus gradually becoming rather tattered and torn, at least so far as long distance transmission is concerned. All transitions from aerial conductors to cable, and *vice versa*, present additional difficulties in maintenance, apart from the inferior transmission properties of the latter. A solution might be for power wires to cross or parallel the railway in cable, leaving the railway the option of aerial conductors. Railways are responsible for the lives of passengers, whereas the function of a power supply is one of convenience, and has a failure yet resulted in tragedy?

Although there have been voices heard crying in the wilderness and rules are constantly under review, a standard code of signalling aspects seems as far off as ever. This is regrettable, but is less so than the driver being sometimes on the left-hand side of the footplate—correct if read in conjunction with the Ministry of Transport requirements—and sometimes on the right-hand side, which must involve anomalies. Here adjustment could be made without waiting for the standard aspects millenium. The pressure which is being brought—rightly or wrongly—upon railways to increase their speed, coupled with increase of tonnage, raises additional problems in the operation, construction and maintenance of locomotives, track and signalling.

A signal engineer's work varies with the mileage, system, organisation, devolution of authority, &c., on the various railways, but generally has the same class of work and similar problems to deal with. An impression might almost be gained from the press that his work consists almost exclusively of highly elaborate power signalling jobs but, taking the four British railways as an example, signal and telegraph maintenance alone costs something like £2,500,000 per annum.

On the four main railways of this country there are approximately 313,400 levers, hundreds of thousands of miles of circuits, and thousands of telegraphs and telephones. A check must be kept upon their general maintenance by careful scrutiny of fault reports, that weaknesses may be detected and rectified. This work is not always as dry as may be imagined, being relieved occasionally by unconscious humour, as when a report on a track circuit failure began "When I arrived I had a drop of point five"! As equipment becomes more complex the checking of fault reports is correspondingly more difficult and specialised. Renewals occupy much attention. Improvements or modernisation often follow them and economies can now often be realised.

Derailments, mishaps, and irregularities involve investigation in varying ways, usually jointly with other departments, and with passenger trains usually necessitate exhaustive inquiry, both by the company and the Ministry of Transport, and much time and effort. "Suggestions" by the staff—many emanating from signalling enthusiasts of other departments—and patents (not to mention patentees), are a constant field for attention. After an accident the flow of "suggestions" generally increases; probably no other department receives as many.

Handling the signalling equipment for private sidings, or joint property, between two or more companies, often introduces fine elements of accountancy, requiring engineers to possess more of a statistical and legal than of a technical mind! There are no fewer than 2,850 individual accounts for sidings, junctions, &c., dealt with annually by the Great Western Railway. Many thousands of miles of telegraph and telephone wire are maintained by the railway companies for the Post Office and traders, and accurate accounting is necessary, not to mention wayleave privileges granted to various bodies. Some signal engineers now maintain watches, clocks, and synchronised time systems, while a new activity concerns loudspeaker equipment, becoming a helpful adjunct at large stations for directing crowds. Research, testing and examination of materials goes on daily. Many signal engineers, too, control their own manufacturing works, and although much detail must necessarily be a matter for devolution of responsibility, major questions require decision.

The growing application of automatic train control, while solving some problems, creates others, if only in the maintenance of the apparatus and adds new responsibilities, when a fault may occur on a long non-stop journey, where the locomotive may not stop for some hundred miles after receiving a defective signal. The reporting and elucidation of faults is then on a different plane from that of other signalling equipment.

No signal engineer would, of course, be happy without new works. These vary from a push bell, ground lever or disc, to a complex interlocking or automatic telephone exchange. There are also many minor works, all requiring detailed treatment; a signal here or there, track circuiting, poles in the way of some improvement, crossing loops to be extended, and facing inlets to goods loops and outlets extended. Doubtless the larger schemes involving, say, a drastic clearance of old equipment, give the designing and construction staff the greater satisfaction, but there are many tedious stages in the transition, and many detailed alterations in carrying out these major works, which, frequently forgotten in the final product, involve a great amount of labour. The reconstruction of stations like Paddington, Bristol, and Cardiff involved no fewer than 80, 30, and 29 stages respectively. Bristol was perhaps unique, in that two temporary mechanical signal boxes, each of 160 levers, had to be erected, altered several times and subsequently displaced. This is an extreme case but typical of what goes on.

Almost a new technique has appeared in railway telegraphy and telephony. Printing telegraphs, automatic telephone exchanges, and multi-channel carrier telephone systems involve complications undreamt of a generation ago, and carry their inevitable responsibilities. Manufacturers have played no inconspicuous part in all this achievement. By close co-operation with the railway engineer, much brilliant work has been and is being done by firms whose names uphold tradition and respect throughout the world.

For every large signalling work there are hundreds of smaller ones, but whether large or small, it is in their scrupulous and conscientious upkeep that in part lies the safety standard of which our railways are so justly proud, and it is fitting to record a tribute to the considerable army of men who carry on their onerous duties, day by day, in fair weather and foul, and under all conditions.

XUM

THE METALLURGY OF A HIGH-SPEED LOCOMOTIVE—II

Some further details respecting the materials used in the construction of the streamlined express engines of the L.M.S.R.

ON pages 303-311 of last week's issue, we dealt in some detail with the construction of the streamlined express engines of the L.M.S.R. from the metallurgical point of view, covering boiler design and materials, engine main frames, cylinders and motion, coupling and connecting rods, axles, wheel centres, and tyres, and some particulars relating to weight reduction and balancing. We herewith present some further information under the same general heading, the subject matter now being spring data, bearing metals, and the construction of the welded tenders. Dealing with these in the order named, the ribbed silico-manganese steel used for the manufacture of the springs, was received from the contractors in long bars in the "as rolled" condition, and complied with the undernoted specification as regards composition:—

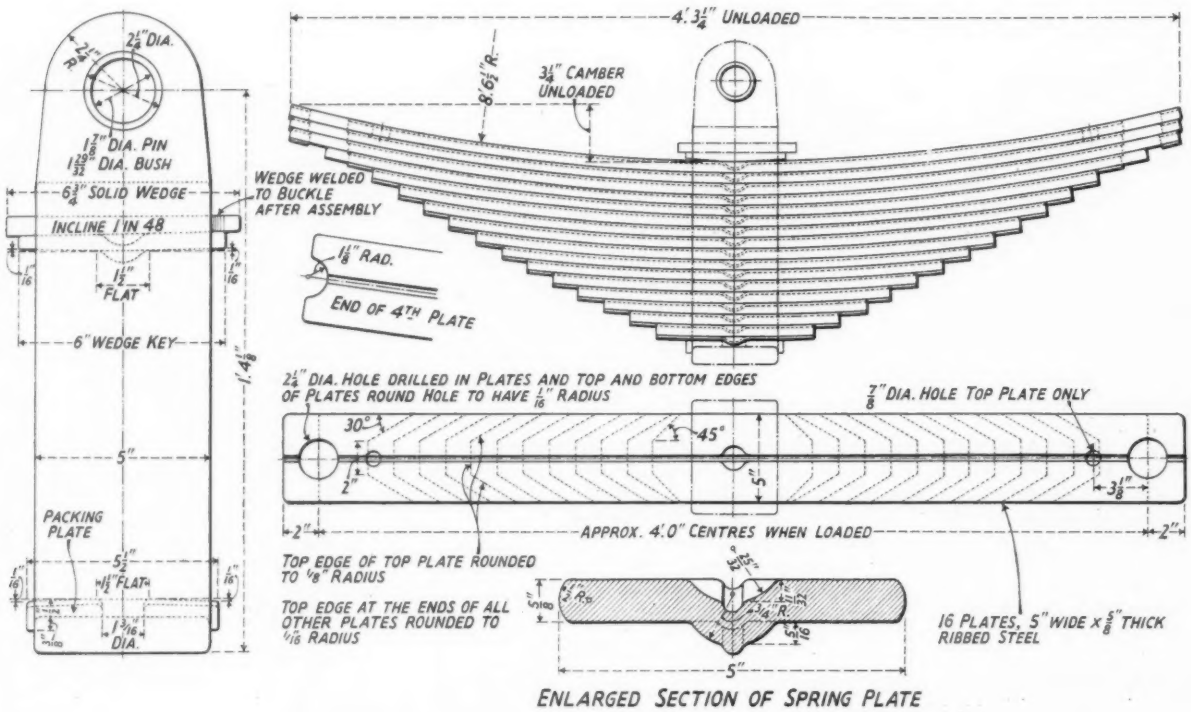
C	Si	Mn	S	P
per cent.	per cent.	per cent.	per cent.	per cent.
0·5-0·6	1·8-2·0	0·7-1·0	0·04 max.	0·04 max.

The spring plates were cold sawn to length, and the longer plates drilled to take the spring link, the shorter ones being speared at the ends. After heating to approximately 850° C., they were bent to the required camber, and cooled to below 600° C. For heat treatment, two town gas-fired furnaces were used, each equipped with a recording pyrometer for temperature control. After soaking at 890° C.—900° C. for about 15 min., the plates were quenched in linseed oil. Thereafter they were tempered in a furnace standing at 800° C. for 4 min. for $\frac{5}{8}$-in. plates, and 3½ min. for ½-in. plates. A hazel stick was used on the plates after withdrawal, to ensure proper temperature conditions by showing heavy sparking; or alternatively, the temperature of the surface of the plate was checked by a contact pyrometer to come within the range 450° C.—500° C.

In these cases, 3 per cent. of the plates are tested, a length of 2 ft. 6 in. being cut off from each plate selected, and cambered to a radius equal to 80 times the thickness, and then hardened and tempered. The test piece, after being pressed straight once, and the camber noted, must stand being pressed straight again six times in quick succession without showing any permanent set. As an example, in a plate $\frac{5}{8}$ in. thick, the required camber is 2¼ in., and the minimum camber after the six successive blows referred to, is 2 in.

Thereafter, the plates were assembled, held together by a loose band, tested, dissembled, shot-blasted to remove scale, examined for flaws, dressed with petroleum jelly, and reassembled. The spring buckle was then fitted, and the tightening key inserted and spot welded to ensure that no looseness would be experienced in service.

The essential differences in manufacturing methods with silico-manganese steel springs as compared with plain carbon steel components, show that whereas the plates for the former are cold sawn and oil quenched before tempering, the latter are sheared and water quenched prior to tempering. In addition, the buckles are wedged



Details of coupled wheel springs. Ribbed silico-manganese steel is used

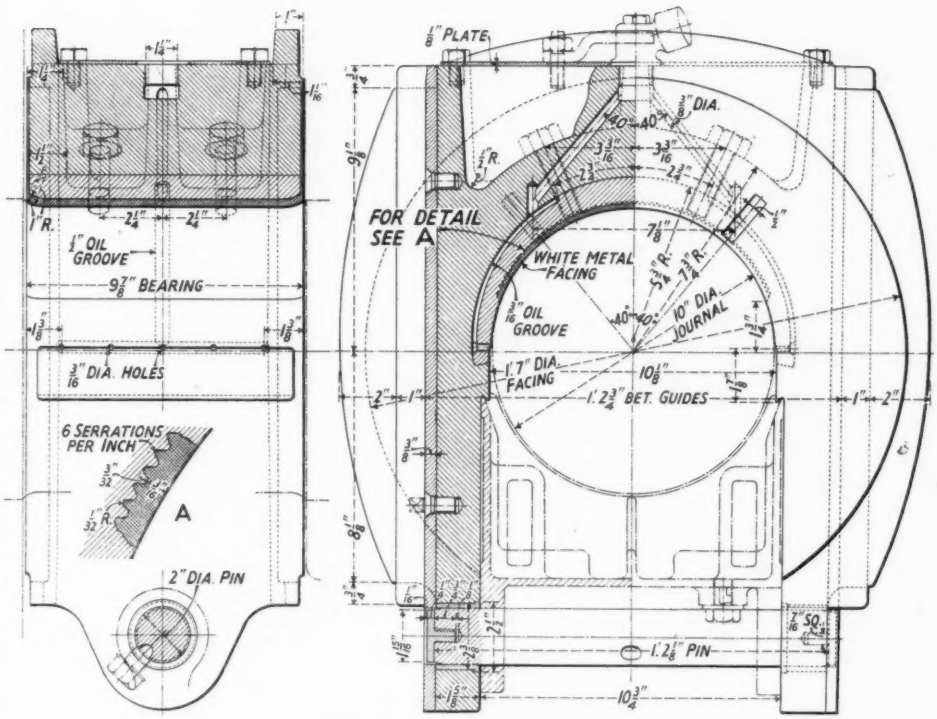
in position in manufacturing the silico-manganese components, whilst for the plain carbon springs, the buckles are shrunk on. The advantage of the hardening in oil instead of water, is the elimination of water quenching cracks. Relatively thick sections of silico-manganese steel can be so dealt with, whereas plain carbon steel will not harden sufficiently in oil when the section exceeds a certain low minimum value.

Other advantages of this steel for springs, may be given as follow:—

(1) Silico-manganese steel is more fool-proof as regards heat treatment and manufacture.

(2) Oil-quenched silico-manganese steel gives less distortion than water-quenched carbon steel.

(3) The elastic limit of silico-manganese steel is higher, and this should be reflected in increased life.



Details of axlebox for coupled wheels

Bearing Metals

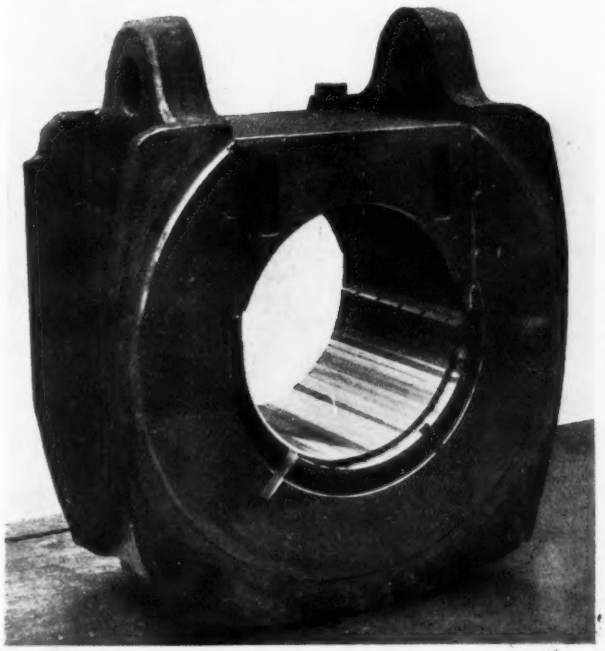
It is essential that bearing metals for locomotives of this kind should have good fatigue resistance, and consequently they are of the high-tin base type. The analysis of the metal used on the big and little ends of the connecting rods and the axlebox bearings, is as follows:—

Tin	85 per cent.
Copper	5 ,,
Antimony	10 ,,

The lining of details is a carefully controlled operation, all white-metal pots being fitted with thermocouples and recorders, and in some cases thermostatic control. The bath used for the tinning of smaller details such as coupling-rod bushes, is also controlled by a thermocouple. This is in accordance with the general methods employed on L.M.S.R. locomotives, and was followed in the case of the *Princess Coronation* engines. The tinning medium used is an alloy of the following composition:—

Tin	59·0 per cent.
Antimony	9·5 ,,
Copper	3·0 ,,
Lead	28·5 ,,

This was arrived at after considerable investigatory work. An interesting test has been developed in connection with the adhesion of the white metal to the brass shells. This test is made by removing a strip of the actual detail, and subjecting it to blows on the Izod testing machine. Periodic checks are made in order to see if the standard of tinning and melting is being obtained.



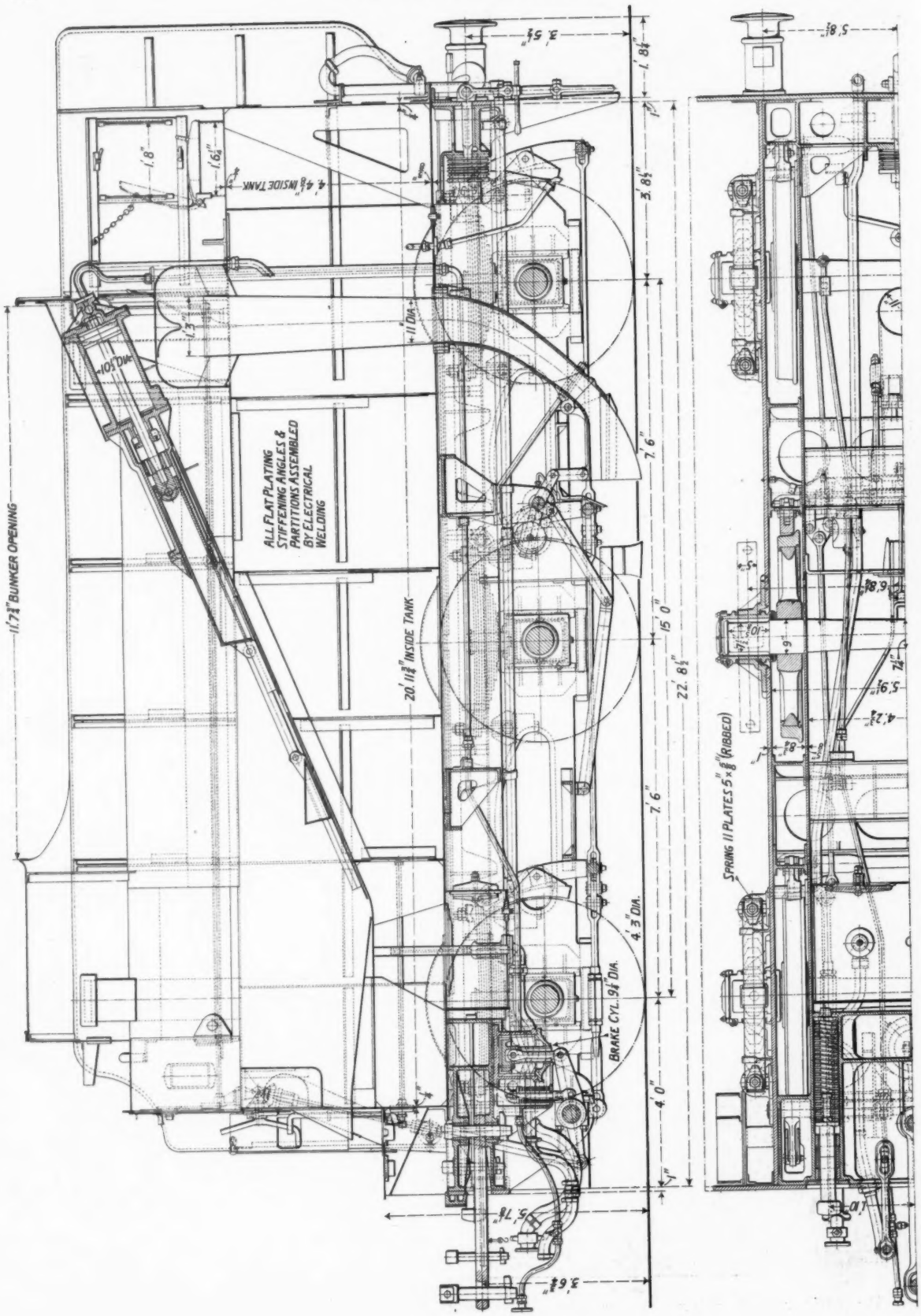
Perspective view of axlebox after machining

Manganese-Molybdenum Steel Forgings

Certain component parts on the engine subject to high stress or shock loading, are made of manganese-molybdenum steel, which is particularly suitable for this purpose. The parts on which this material is used are as follow:—

(1) Brake hangers, levers, pull rods, and cross beams.
(2) Spring bolts and spring adjusting links.
(3) Reversing shafts and die blocks.
(4) Slidebar bolts.
(5) Bolts securing leading crank pin washers.

XUM


ALL FLAT PLATING STIFFENING ANGLES & PARTITIONS ASSEMBLED BY ELECTRICAL WELDING
20' 11¾" INSIDE TANK
11' 7¾" BUNKER OPENING
BRAKE CYL. 9¼" DIA.
SPRING II PLATES 5" × ⅝" (RIBBED)

Detail of welded tender showing coal pusher and water pick-up apparatus

Welded tenders for streamlined express engines in the Crewe shops

In foreground, removing surface irregularities with portable grinding machine

MANGANESE-MOLYBDENUM STEEL FORGINGS, MANUFACTURED AT CREWE WORKS

Description of material	Maker	Cast No.	Breaking stress, tons per sq. in.	Elongation % on 2 in.	Ratio y.p./b.s., %	Contr'n of area, %	Cold bend test.	Chemical analysis							Izod impact test		
								C %	Si %	Mn %	S %	P %	Ni %	Mo %	1	Ft.-lb. 2	3
Adjusting links }	Brown Bayley's Steelworks Limited	B. 2150	40·0	29·0	83·0	70·0	180° E.T.W.F.	0·20	0·24	1·54	0·039	0·035	0·39	0·24	111	104	107
,, screws }																	
Pull rods }	S. Fox & Co. Ltd. ..	N. 5859	42·6	27·0	82·2	70·0	Do.	0·19	0·245	1·54	0·028	0·040	0·65	0·19	98	96	102
Spring bolts }																	
Crossbeams ..	Brown Bayley's Steelworks Limited	A. 1822	40·0	28·0	82·0	71·6	Do.	0·17	0·22	1·61	0·038	0·035	0·36	0·26	91	87	104
Die blocks ..	Colvilles Limited ..	4C. 6045	38·6	26·0	81·4	65·3	Do.	0·155	0·110	1·56	0·029	0·029	0·49	0·26			
Reversing shafts	Do. ..	4C. 6277	45·5	22·0	80·0	59·1	Do.	0·18	0·16	1·69	0·034	0·038	0·71	0·23			
Specified : ..			*40/45*	*25/20*	*75 min.*		*180° E.T.W.F.*	*0·15/ 0·20*	*0·25*	*1·5/ 1·70*	*max. 0·040*	*max. 0·040*	*0·3/ 0·5*	*0·2/ 0·3*			*70 min.*
Brake hangers ..	S. Fox & Co. Ltd. ..	W. 360	44·0	27·0	79·1	66·0	180° E.T.W.F.	0·20	0·236	1·66	0·026	0·038	0·50	0·22	106	108	112
Brake levers ..	Colvilles Limited ..	4C. 6277	45·4	25·0	83·7	66·0	Do.	0·18	0·16	1·69	0·034	0·038	0·71	0·23	72	73	93
Spring bolts ..	Brown Bayley's Steelworks Limited	E. 7843	44·0	28·0	82·0	71·6	Do.	0·18	0·23	1·58	0·039	0·033	0·49	0·29	108	109	112
,, ..	,,	,,	42·0	28·0	83·4	70·0									115	108	107
,, ..	,,	B. 2150	41·0	29·0	78·0	68·0	Do.	0·20	0·24	1·54	0·039	0·035	0·39	0·24	99	105	98
Bolts	Colvilles Limited ..	D. 8041	42·0	29·0	83·5	71·6	Do.	0·18	0·25	1·52	0·034	0·033	0·46	0·28	115	114	115
		,,	43·0	28·0	83·8	71·6									109	118	116
Specified : ..			*40/45*	*25/20*	*75 min.*		*180° E.T.W.F.*	*0·15/ 0·20*	*0·25*	*1·5/ 1·7*	*max. 0·040*	*max. 0·040*	*0·3/ 0·5*	*0·2/ 0·3*		*70 min.*	

The specification calls for the following characteristics:—

Physical Tests	
Breaking strength, tons per sq. in.	40–45
Elongation, per cent. on 2 in. gauge length	25–20
Ratio of yield point to breaking stress, per cent.	75 min.
Chemical Analysis	Per cent.
Carbon	1·5–2·0
Silicon	0·25
Manganese	1·5–1·7
Sulphur	0·04 max.
Phosphorus	0·04 max.
Nickel	0·3–0·5
Molybdenum	0·2–0·3

An Izod impact test of at least 70 ft.-lb. is called for, and in the actual material produced, Izod impact figures of over 100 ft.-lb. are frequently obtained.

This may be said to complete the description of the principal metallurgical characteristics in so far as they apply to the locomotive itself, and as has already been intimated, the same principle and methods are followed in the case of certain other locomotives built by and for the L.M.S.R., in accordance with the instructions and requirements of Mr. W. A. Stanier, the Chief Mechanical Engineer.

Tender of Welded Construction

Before concluding our article, it is necessary to make some brief mention of the system followed in building up the tender, in which welding was adopted on a fairly wide scale. The tender tanks are welded throughout with an electrode of the shielded-arc type, and a special layout was arranged at Crewe for progressive working, the underlying principle being to keep vertical and overhead welding to a minimum. With the exception of the vertical corner joints, all the welding was done at a single pass. At the first berth or stage, gussets and stiffening angles were welded to the back and side plates, the well was built up, and the door plate and tool cupboards built into a single unit. At the second berth, the bottom plate was inverted, and had the well and delivery pipe flange welded on before being turned right way up to have the splashers welded on. The bottom was then lifted on to the third berth, where it was clamped down, and had the back, front and side plates welded to form a complete box section which was sufficiently rigid to withstand lifting on to the next berth. Here, the top and sloping plates were welded into position, and the internal stiffening bars also welded in place. This completed the internal welding, and, at the last berth, the tool tunnel, slope plate extensions, platform plate, and other parts were welded on.

Where it was necessary to obtain water-tightness, the welding was continuous, but elsewhere intermittent welding was adopted. With this procedure, distortion was kept to a minimum, but there was an inherent distortion on the side plates, where the gussets were welded on, causing small ridges to form on the outside of the plate. These ridges were ground off by portable hand-operated grinding tools when the tank was completed. The saving in weight due to using a welded tank instead of the usual riveted tank, is approximately one ton.

List of Contractors

The following is a list of firms which supplied materials and components used in the construction of the L.M.S.R. streamlined locomotives:—

Description of Material	*Maker*
Acid nickel steel boiler plate	Colvilles Limited.
Boiler tubes	Stewarts and Lloyds Limited.
Elements	Superheater Co. Ltd.
Steam pipes in smokebox	Stewarts and Lloyds Limited.
Strips for boiler clothing	Midland Iron Co. Ltd.
Smokebox plates	Colvilles Limited.
Ashpan plates	Colvilles Limited.
Copper firebox and throat plates	Imperial Chemical Industries Limited.
,, ,, ,,	Thos. Bolton & Sons Ltd.
Copper pipes	Yorkshire Copper Works Limited
Clothing sheets	F. Braby & Co. Ltd.
,, ,,	Wilbraham & Smith.
Injectors, live and exhaust	Davies & Metcalfe Limited.
Firebricks	E. J. & J. Pearson Limited
Acid steel bars for boiler stays	Colvilles Limited.
Hot rolled Monel metal	Henry Wiggin & Co. Ltd.
High tensile acid steel frame plate, Grade B.	Colvilles Limited.
Acid steel loco. axles	Steel, Peech & Tozer.
Slabs for crank webs	Hadfields Limited.
Acid steel loco. tyres, pony truck.	English Steel Corporation Ltd.
Acid steel loco. tyres, coupled wheels	Steel Company of Scotland Limited.
Tyres for engine bogie and tender wheels	Thos. Firth and John Brown Limited
Vibrac steel coupling and connecting rods.	English Steel Corporation Limited.
Die blocks	Colvilles Limited.
Reversing shafts	Colvilles Limited.
Crossbeams	Brown Bayley's Steelworks Limited.
Silico manganese springs—	
Bogie	Willford & Co. Ltd.
Coupled	S. Osborn & Co. Ltd.
Pony	Barrow Hæmatite Steel Co. Ltd.
Spring bolts	Brown Bayley's Steelworks Limited.
Bolts	Colvilles Limited.
Adjusting links and screws	Brown Bayley's Steelworks Limited.
Pull rods and spring bolts	S. Fox & Co. Ltd.
Brake hangers	S. Fox & Co. Ltd.
Brake levers	Colvilles Limited.
Cab plates	Appleby-Frodingham Steel Co. Ltd.
,,	Stringer & Co. (Sheffield) Ltd.
,,	Consett Iron Co. Ltd.
,,	South Durham Steel & Iron Co. Ltd.
Rubber springs and sheeting	Clyde Rubber Works Co. Ltd.
Billets for hornclips	Steel, Peech & Tozer.
Stainless steel hand rail	Accles & Pollock Limited.
Bearings—ball	Skefko Ball Bearing Co. Ltd.
,, needle	Hoffman Mfg. Co. Ltd.
Speed recorders	Hasler Telegraph Works.
Lubricators	Silvertown Lubricants Limited.
Grease separators	Davies & Metcalfe Limited.
Reversing gear roller chain	Morse Chain Co. Ltd.
Alfol	Alfol Insulation Limited.
Cab windows	Pilkington Bros. Ltd.
Engine buffers	Geo. Turton Platts & Co. Ltd.
Platform plates	Patent Shaft & Axletree Co. Ltd.
,, ,,	Park Gate Iron & Steel Co. Ltd.
Streamlining	J. Williams & Co. (Wishaw) Ltd.
,,	Smith & McLean Limited.
,,	F. Braby & Co. Ltd.

NEW TRAINING SCHOOL FOR UNDERGROUND MEN.—A new training school for railway staff is being planned by the London Passenger Transport Board. It will be part of a four-storey building to be built over the Edgware Road (Metropolitan) station. Here tube men will be trained to drive the new stock with its faster acceleration and braking now being built for the Northern and Bakerloo Lines. Surface line drivers will be taught to use Metadyne electrical control. In addition to teaching present staff the latest methods, London Transport will have to train 400 additional drivers and 700 additional guards by 1940. The present Underground school at Lambeth North station will be abandoned. A central employment and training school for the operating staff of the whole Underground railways was established at Lambeth in 1920. The school was completely reconstructed and re-equipped in 1929-30, and was then described and illustrated in THE RAILWAY GAZETTE of October 10, 1930.

NEW FOUR-CYLINDER 2-8-4 LOCOMOTIVES FOR NORWAY

Three powerful but lightly-constructed locomotives are now working on the Bergen-Oslo section of the Norwegian State Railways

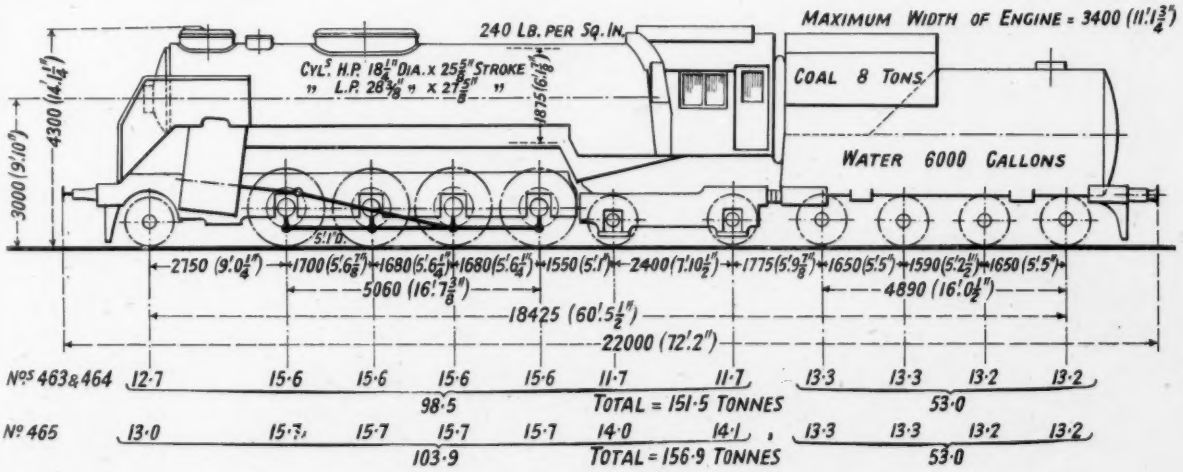
NOTABLE accelerations of the Bergen—Oslo services were, as we recorded at the time, introduced on May 15 last when the Continental summer timetables came into force. These accelerations were made possible by the placing in service of three new four-cylinder compound 2-8-4 locomotives built by the Thunes Mekaniske Vaerksted of Oslo. The three engines, Nos. 463 to 465, incorporate slight differences: No. 465 is fitted with a booster on the trailing truck and No. 464 has a larger superheater than the other two.

The weight available for adhesion is approximately 62 tons and the total weight 97 tons (Nos. 463-4) and 102 tons (No. 465). In order to keep the axle load down to about 15½ tons welding was largely used in the construction of the frames. The weight of the tender, which is of welded construction, is 52½ tons in working order.

The locomotives are designed for a maximum speed of 62 m.p.h. and have a maximum rigid wheelbase of 11 ft. 2 in. The rear truck is pivoted to the main frame between the trailing coupled axle and the leading truck axle. Special equipment includes the provision of two regulators, one in the steam dome and one in the superheater header, the latter being that normally used, a double blast pipe and two Thermic syphons in the firebox. The principal dimensions of the locomotives are as follow:—

Cylinders:—	
High pressure, dia.	18¼ in.
,, ,, stroke	25⅝ in.
Low pressure, dia.	28⅜ in.
,, ,, stroke	27⅞ in.
Coupled wheels, dia.	5 ft. 1 in.
Boiler pressure	240 lb. per sq. in.

Heating surface:—	Engines Nos. 463 and 465	Engine No. 464
Evaporative	2,742	2,817
Superheater	1,092	1,135
Total	3,834	3,952
Grate area	55·55 sq. ft.	
Tender capacity:—		
Coal	8 tons.	
Water	6,000 gallons.	



General arrangement diagram of new Norwegian State Railways 2-8-4 locomotives

XUM

MACHINING HORN GAPS IN LOCOMOTIVE FRAMES

Device employed at Doncaster locomotive works, L.N.E.R.

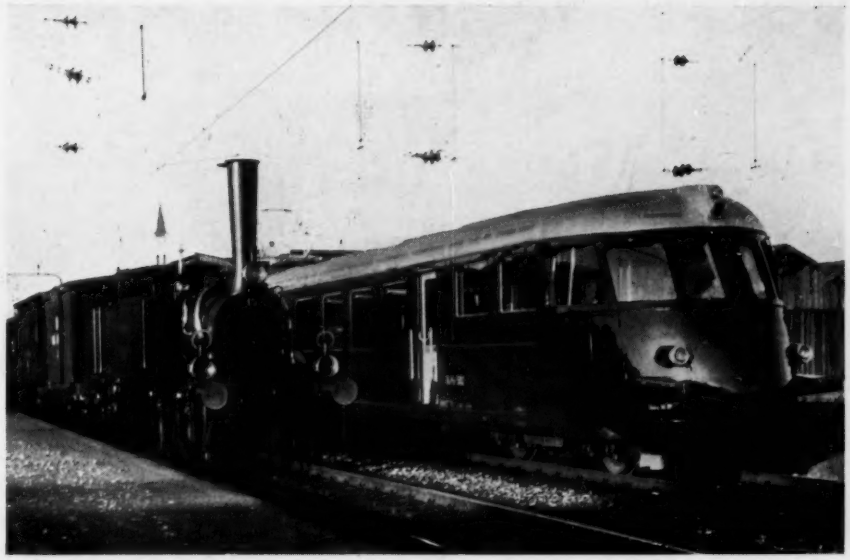
DURING a recent visit to the Doncaster works of the London & North Eastern Railway, we noted with interest the use of a portable pneumatic frame edge planing machine for machining horn gaps in locomotive frames. This device was planned and made at Doncaster, and appeared to be working to advantage on the task referred to. The frames of locomotives and tenders are first cut out by oxy-acetylene, and then machine slotted in batches of ten plates. In order to get the horn gaps at the correct distance apart, it was formerly the practice to finish these gaps to a standard length gauge by chipping and filing; but to eliminate this tedious operation, the portable pneumatic frame edge planing machine illustrated was made and brought into use.

Special method employed at Doncaster Works, L.N.E.R. for machining horn gaps in locomotive frames

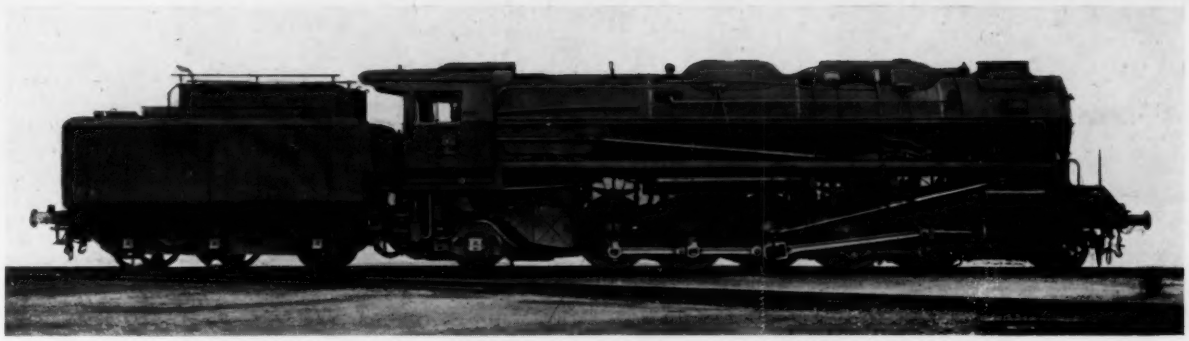
The machine is actuated by a standard type pneumatic drilling machine, driving a roller link chain. A tool box guided by the frame plate of the machine and by the vertical guide rod, is so arranged that when it is at the bottom of the guide, it is picked up and drawn upwards by the moving chain, taking a cut as it ascends at the top of the stroke. The tool box is tripped out of its link with the chain and falls by gravity, to be picked up again and make another rising and cutting stroke. The cross feed is applied by hand, as seen in the illustration. A suitable gear reduction is used, and the roller chain is tensioned by an adjustable jockey sprocket wheel, both of which are shown. The portable pneumatic drill illustrated is the New Giant Non-Reversible type, size N.G.2 having a No. 3 morse taper; the maker is the Consolidated Pneumatic Tool Co. Ltd.

WOODEN RAILS IN NEW SOUTH WALES

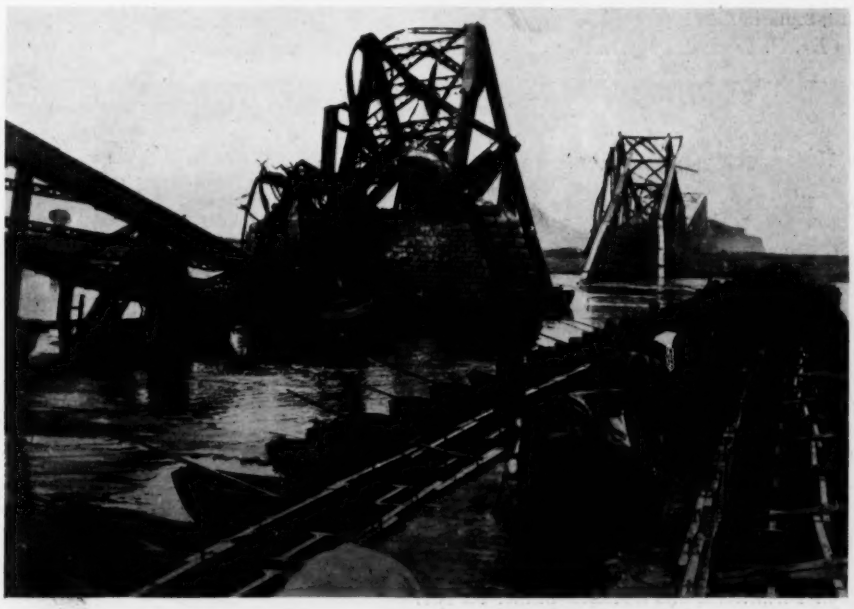
In our issue of August 28, 1936, we published an illustration showing a veteran steam locomotive which has been at work for about half a century in the Langley Vale Concession, N.S.W., running on a track consisting of squared hardwood timbers. By courtesy of Mr. W. A. Robertson, Director of the Forest Products Research Laboratory at Princes Risborough, we are now enabled to reproduce a recent photograph of this interesting track. It will be noticed that the timber rails are spiked direct to the sleepers



Right: The oldest steam locomotive still running on the Swiss Federal Railways — the "Speiser" of 1857—seen alongside a modern railcar (see review of the Swiss Federal Railways calendar on page 353)



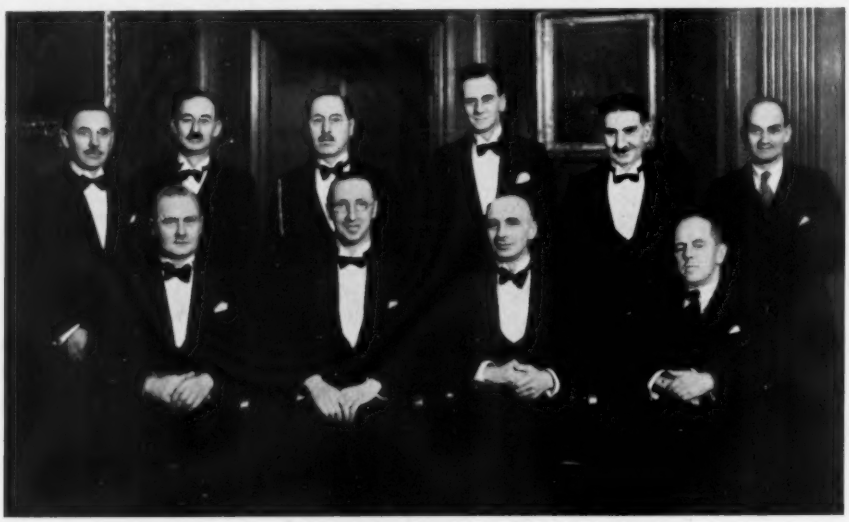
New 2-10-2 type three-cylinder heavy freight locomotive, French National Railways. Drawings and particulars of this locomotive, which was built for the Alsace-Lorraine Railways now forming part of the Eastern Division of the French National Railways, appeared in "The Railway Gazette" of September 27, 1935 (pages 489-491) when the construction of the engine was begun at the Grafenstaden works of the Alsace-Lorraine Railways. The locomotive has now been in service for over a year and has, we understand, given every satisfaction



Left: A good example of the very complete demolition of a fine through-type large-span girder bridge by the retreating Chinese troops prior to the Japanese advance. The bridge is on the Tientsin-Pukow Railway close to Tsinau, the capital of Shantung Province, and spans the Yellow River. The Japanese immediately set to work to provide a temporary railway bridge, and it is reported that the Tientsin-Pukow line has now been reopened to traffic

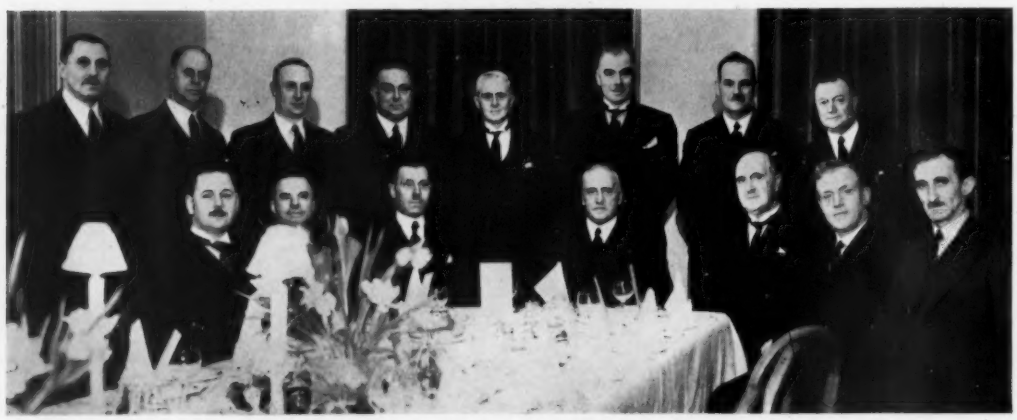
RAILWAY VULNERABILITY IN WAR

Annual dinner of the Royal Engineers' Transportation Units, Supplementary Reserve—(*see page* 377)



Left to right (*standing*): Messrs. W. G. Anwyl (Secretary, R.C.H. Chemists' Committee), A. M. Brine (Principal Assistant, Chemical Laboratory and Research Section, G.W.R.), E. Rhodes (Assistant Chief Chemist, L.N.E.R.), W. P. Henderson (Chief Chemist, L.M.S.R.), G. W. Jones (Assistant Chief Chemist, L.M.S.R.), W. Blyth (Chemist's Department, Southern Railway)
Seated: Messrs. R. W. Dawe (Chief of Chemical Laboratory and Research Section, G.W.R.), T. Henry Turner (Chief Chemist and Metallurgist, L.N.E.R.), Dr. P. Lewis-Dale (Chief Chemist, retired, L.M.S.R.), H. Hall (Chief Chemist, Southern Railway) [*Photos. Swaine*

Group at dinner to Dr. P. Lewis-Dale, formerly Chief Chemist L.M.S.R. (*see opposite*)



Left to right, standing: Messrs. J. R. C. Williams (Paddington), H. C. R. Calver (Liverpool Street), J. B. Dunkley (St. Pancras), H. Ireland (King's Cross), T. Smith (late of Euston), J. Harrison (Euston), H. C. Greenfield (Waterloo).
Seated: Messrs. A. M. West (Holborn Viaduct), E. C. Card (London Bridge), A. J. Trewsen (Cannon Street), W. Enves (Victoria), G. W. Eggleshaw (Marylebone), S. G. Shipworth (Fenchurch Street), W. W. Cooke (Broad Street) [*L.N.A.*

London Terminal Stationmasters' dinner on February 15

RAILWAY NEWS SECTION

PERSONAL

L.N.E.R. Secretarial Appointments

The L.N.E.R. announces that the directors have appointed Mr. P. J. Dowsett as Secretary to the company in succession to the late Mr. James McLaren.

The directors have also appointed Mr. W. H. Johnson as Assistant Secretary in place of Mr. Dowsett.

Mr. P. J. Dowsett joined the railway service in the Secretary's Office of the Great Northern Railway Company. After filling positions in the various sections of that office, he became Assistant to the Secretary on October 1, 1911, and Assistant Secretary of the Great Northern Railway Company on June 3, 1921. Upon the amalgamation of railways in 1923, Mr. Dowsett was appointed Assistant Secretary of the London and North Eastern Railway Company.

A portrait and biography of Mr. W. H. Johnson, the new Assistant Secretary, appear overleaf.

Mr. A. P. Innocent has retired from the position of Deputy Stores Superintendent, Southern Railway. Mr. A. B. McLeod, Assistant to the Locomotive Running Superintendent, succeeds him, with the title of Assistant to the Stores Superintendent.

From *The London Gazette* of February 18: Regular Army, Supplementary Reserve of Officers, Royal Engineers, Transportation: Captain N. McK. Jesper, M.C., to be Major (January 1).

Lieut. M. B. Thomas, to be Captain (January 1).

Mr. A. S. Ismail, who, as Managing Director of the Indian Trades Exhibition Co. Ltd. has since 1932 organised and run several exhibition trains throughout India, has been appointed Indian Trade Commissioner at Mombasa.

Engineer Waldemar de Coimbra Luz has been appointed General Manager of the Central Railway of Brazil, to succeed Colonel Mendonça Lima, who, as recorded in The Railway Gazette of January 14, is now Minister of Transport in the Cabinet of Dr. Getulio Vargas.

Mr. William Matthews, who has succeeded Mr. S. R. Jones as Works Manager, Caerphilly, Great Western Railway, is the first Caerphilly man to hold this position. He was born at Bargoed, but has lived at Caerphilly for more than 40 years, his father having been Stationmaster there under the former Rhymney Railway. Mr. Matthews was educated at Lewis' School, Pengam, and served an apprenticeship with the Mercantile

Mr. P. J. Dowsett
Appointed Secretary,
London & North Eastern Railway Company

Pontoon Company. He joined the Rhymney Railway at Caerphilly locomotive works on its opening in 1900. For about 17 years Mr. Matthews held the position of Erecting Shop Foreman, and as a result of the grouping of the railways, 1921-22, he was responsible for establishing and reorganising G.W.R. practice in his particular shop. With the building of the new erecting shop in 1925, he assisted in introducing a progressive system to deal with all types of G.W.R. and constituent companies' engines. Mr. Matthews is Chairman of the Caerphilly G.W.R. Engineering Society. The progressive repair system at Caerphilly was described in *The Railway Engineer* of August, 1930.

Lieut.-Colonel A. Buckley and Mr. R. J. Hall have been appointed directors of the Liverpool Overhead Railway, in succession to the late Mr. H. B. Orme and Alderman M. H. Maxwell.

The King conferred the honour of knighthood at Buckingham Palace on February 17 upon the following:—

Mr. Charles Bruce-Gardner, Industrial Development Co. Ltd.

Mr. William Reavell, M.I.Mech.E., lately President of the British Engineers' Association.

The King has been pleased to approve that Beryl Lennox Jarrad, widow of Mr. Vivian Jarrad, formerly Agent, Bengal-Nagpur Railway, be granted the style, place, and precedence to which she would have been entitled had her husband survived to receive the honour of Knighthood, which His Majesty expressed the intention of conferring upon him in the Coronation Honours List, 1937. (Mr. Jarrad died on January 25, as recorded in our issue of January 28.)

Dr. Percy Lewis-Dale, Ph.D., F.I.C., who has retired from the post of Chief Chemist, L.M.S.R., was entertained on January 27 at a complimentary dinner held at the Hotel Great Central, London, and attended by the chief chemists of the four main-line railways, with their senior assistants and the Secretary of the Railway Clearing House Chemists' Committee. Surrounding the flowers forming the table centre at the dinner was a model railway on which stood tank wagons for inflammable liquids, tar, and compressed gas, and special containers for perishable goods, these typifying the major interests of the R.C.H. committees on which the chemists serve. All these models bore the initials of the companies represented at the dinner. A group photograph taken at the dinner is reproduced opposite.

Mr. G. H. Crook, Chief Assistant to the Signal Engineer, Great Western Railway, has been elected President of the Institution of Railway Signal Engineers for 1938/39. An abstract of Mr. Crook's Presidential address on February 23 is published on page 361 of this issue. Mr. Crook joined the Telegraph Department of the G.W.R. in 1898, and was transferred to the

XUM

Chief Telegraph Superintendent's Office, Paddington, in 1900, and to the combined Signal and Telegraph Department at Reading in 1903, where he obtained experience in various sections of that department. In 1912 he was offered and accepted an appointment on the Victorian Government Railways at Melbourne in connection with the power signalling installation there. In 1919 Mr. Crook became Power Signalling Construction Engineer, and was subsequently also in charge of maintenance and signalling and of kindred equipment, being with the Cape Government Railways. In 1913 he was transferred to Johannesburg as Principal Clerk in the Pensions Branch, and in 1921 was appointed Secretary of the Pensions Committee which was responsible for the 1925 superannuation fund legislation. In 1925 Mr. Hogg became Assistant Superintendent, Staff, in the General Manager's office, and the following year was Chairman of the Appeal Board. In 1930 he was Chairman of a committee of inquiry into the Catering Department, and in 1931 was promoted to the position of Superintendent of Staff. He and Committee Clerk, L.N.E.R., in March, 1929.

We regret to record the death on February 21, at the age of 81, of Mr. William Alban Jepson, who was for many years a chief officer of the L.N.W.R. and a permanent member of the Railway Rates Tribunal, 1921-31. Mr. Jepson entered the service of the former London & North Western Railway in September, 1871, and after spending a few months in the ticket department of the Audit Office, the following year was transferred to the

Mr. G. H. Crook

Chief Assistant to the Signal Engineer, G.W.R., elected President of the Institution of Railway Signal Engineers, 1938-39

Mr. W. H. Johnson

Appointed Assistant Secretary, London & North Eastern Railway Company

Elliott [*& Fry*

The late Mr. William Alban Jepson,

For many years a chief officer of the L.N.W.R. and permanent member, Railway Rates Tribunal, 1921-31

designated Signal and Telegraph Maintenance Engineer, on March 1, 1923. In August of that year, however, he resigned from the Victorian Government Railways in order to accept an appointment in the Signal and Telegraph Department, G.W.R., and in May, 1928, was promoted to be Assistant to the Signal Engineer, Reading. In 1936 he became Chief Assistant. Mr. Crook was already a Member of Council of the Institution of Railway Signal Engineers previous to his election as President, and had on several occasions contributed papers to the institution. At the Cairo International Railway Congress in 1933 he was Reporter for the British Empire, America, and certain other countries on the subject of Automatic Train Control.

Mr. George Hogg, Expenditure Accountant of the South African Railways and Harbours, has proceeded on leave of absence prior to retirement. Mr. Hogg was born in Scotland and educated at the Herriot-Watt College in Edinburgh. In 1892 he joined the North British Railway as clerk; eight years later he took up an appointment was a member of a committee of inquiry into the Accounts Department, and in 1934 was appointed Expenditure Accountant. Mr. Hogg also had a distinguished military career. During the great war he was attached to the Defence Force in the early stages, afterwards serving for two years in East Africa, attaining the rank of Major of the 8th South African Infantry; later he became Lieut.-Colonel in the Railways and Harbours Rifles.

Mr. W. H. Johnson, who, as announced above, has been appointed Assistant Secretary of the London & North Eastern Railway Company, began his career as a junior clerk in the Secretary's Office of the former Great Central Railway at Manchester in November, 1901. In 1906 he was transferred to London with the Headquarters staff. Mr. Johnson acted for a number of years as Personal Clerk to the late Lord Faringdon when he was Chairman and Secretary of the G.C.R. Subsequently, he had experience in various sections of the Secretary's Department. He was appointed Board and Committee Clerk, and, continuing in that position at the amalgamation of 1923, became Chief Board office of the Insurance Society, which had just been established by the company to provide benefit for the staff in case of accident and which was later on extended to cover ordinary sickness benefit. In 1877 he took up a clerkship in the Mineral Office, and in this department was closely associated with the schemes which led to the passing of the Rates and Charges Order Confirmation Acts of 1891, and the general revision of rates consequent upon these, which operated from January 1, 1893. On the retirement of Mr. Fewkes in 1902, Mr. Jepson was appointed to succeed him as Mineral Traffic Manager, which position he held until 1908. In this capacity he undertook the Parliamentary work for the General Manager and the purchase of locomotive coal for the company (about 2,250,000 tons per annum). On the retirement of the late Mr. H. Partington in 1908, Mr. Jepson was appointed Assistant Goods Manager, and, as such, while retaining the Parliamentary work and the purchase of locomotive coal, was responsible for the whole of the rates and charges on merchandise traffic as well as passenger fares, season and traders' and workmen's tickets. He also had

charge of the arrangements at all the private sidings (about 750 in number) connected with the London & North Western Railway, claims on goods traffic, and outstanding accounts and disputes with traders in regard to charges, as well as the pooling arrangements in which his company was interested, and he made the first draft of the famous pooling arrangement with the Midland Railway. At the end of 1913 he was appointed Assistant to the General Manager (Sir Frank Ree), and in 1919, with the consent of the London & North Western directors, was nominated by Sir Eric Geddes to represent railways on the Rates Advisory Committee, set up under the Ministry of Transport Act, 1919. From this it was a natural transition to his position as a permanent member of the Railway Rates Tribunal in 1921. When, consequent upon this appointment, Mr. Jepson retired from the London & North Western Railway, he had completed just over 50 years' service with the company. From 1919 Mr. Jepson was a Member of the Rates Advisory Committee constituted under the Ministry of Transport Act, 1919. He retired from the Railway Rates Tribunal in 1931.

TRIBUTES TO MR. JEPSON

Mr. W. Bruce Thomas, K.C., President of the Railway Rates Tribunal, paid a tribute to Mr. Jepson's work when the tribunal met at the Royal Courts of Justice on Tuesday. He said that Mr. Jepson had been a great figure in that court, and would always be remembered with great affection both by the trading and railway interests. Mr. Jepson had an outstanding knowledge of all matters connected with transport, particularly by rail, and also of the coal trade. Mr. Bruce Thomas recalled that Mr. Jepson had taken a most prominent part in the settlement of the classification for the Rates Advisory Committee, in which arduous task his knowledge was invaluable. Later, in the settlement of the standard charges and the determination of the standard revenue, his assistance to the tribunal and to all who appeared before the court would always be gratefully remembered. He had known Mr. Jepson for over thirty years, and considered him one of the fairest witnesses it had ever been his privilege to hear. They would always remember Mr. Jepson in that court, and desired to tender to Mrs. Jepson their great sympathy in the loss she had suffered.

Mr. H. A. Chapman, Solicitor for the railway companies, said that although it was only by reputation he knew Mr. Jepson, yet his reputation was so great that one could not help feeling that there was a personal sorrow at the passing of one who was a very great figure not only in the court and what led up to the formation of the court, but in the railway life before.

We regret to record the death of Mr. W. J. Jerram, Railway Representative of C. C. Wakefield & Co. Ltd., who was killed in a motorcar accident between Bulawayo and Salisbury, Rhodesia, on February 17. Mr. Jerram was for some years connected with Messrs. Rendel, Palmer & Tritton, Consulting Engineers, and afterwards with C. C. Wakefield & Co. Ltd., for whom he travelled extensively as the company's Railway Representative in India and elsewhere. He met his death while in the middle of a tour of the South and East African railways. Mr. Jerram was the son of the late Canon Jerram of Worcester. He leaves a widow and two children.

Lord Lloyd, Lord Trenchard, Sir Edmund Davis, directors, are on a visit to the Rhodesia Railways, and Mr. D. O. Malcolm, also a director, is expected there next month.

We understand that Sir Nigel Gresley, Chief Mechanical Engineer of the London & North Eastern Railway, is going for a voyage to South Africa, sailing on March 4 in the *Arundel Castle*. During a short stay in the Dominion Sir Nigel proposes to inspect the electrified sections of the South African Railways.

Royal Engineers Transportation Units, Supplementary Reserve

(*See illustration on page* 374)

Colonel Sir Herbert A. Walker, K.C.B., T.D., presided at the tenth annual dinner of the Royal Engineers Transportation Units Supplementary Reserve, which was held at the Abercorn Rooms on Friday, February 18.

Those present included: Captain J. H. Anderson, R.E.; Major S. L. Baister; Colonel V. M. Barrington-Ward, D.S.O.; Major F. J. Biddulph, M.C., R.E.; Lieut. H. T. Bird, R.E. (S.R.); Bvt.-Colonel W. E. Blakey, M.M.; Capt. J. Blundell, R.E. (S.R.); Capt. N. E. V. Brady, R.E. (S.R.); Capt. P. D. G. Buchanan, R.E.; Lieut. A. H. Cantrell, R.E. (S.R.); Colonel R. Carpmael, O.B.E.; Lt.-Colonel A. B. Chester, R.E. (S.R.); Lieut. A. J. Clarkson, R.E. (S.R.); Major E. C. Cookson, R.E. (S.R.).

Major L. F. S. Dawes, M.B.E.; Lt.-Colonel J. V. Denning, M.C., R.E. (S.R.); Major R. H. Edwards, R.E. (S.R.); Lieut. C. M. Field, R.E. (S.R.); Lieut. S. A. Finnis, R.E. (S.R.); Colonel J. P. S. Greig; Capt. C. E. M. Herbert, R.E.; Major F. Holland; Capt. H. L. Hopkins, R.E. (S.R.); Lieut. D. G. Hughes, R.E.; Capt. V. R. Illingworth, R.E. (S.R.); 2nd Lieut. F. J. Ivimey, R.E. (S.R.); Capt. N. McK. Jesper, M.C., R.E. (S.R.); Mr. J. A. Kay; Major L. J. M. Knotts, R.E. (S.R.); Major C. A. Langley, M.C., R.E.; Lieut. C. R. A. Linton, R.E. (S.R.); Capt. G. A. Lemon, R.E. (S.R.).

Capt. I. L. H. Mackillop, R.E.; Colonel L. Manton, O.B.E.; Major L. E. Marr, R.E. (S.R.); 2nd Lieut. E. J. M. Matheson, R.E. (S.R.); 2nd Lieut. R. G. M. Matthews, R.E. (S.R.); Lt.-General Sir Reginald S. May, K.C.B., K.B.E., C.M.G., D.S.O.; Lt.-Colonel D. J. McMullen, D.S.O., O.B.E., R.E.; Lieut. D. C. Merry, R.E.; Mr. J. Miller; 2nd Lieut. W. B. S. Miller, R.E. (S.R.); Lieut. H. G. Neale, R.E. (S.R.); Mr. C. H. Newton; Capt. C. P. Parker, M.C., R.E. (S.R.); Lieut. A. C. J. Payne, M.M., R.E. (S.R.); Capt. J. S. Payne, R.E.; Lieut. F. H. Petty, R.E. (S.R.); Capt. A. T. de Rhé Philipe, R.E.; 2nd Lieut. J. R. R. Price, R.E. (S.R.); Major A. S. Quartermaine, M.C.; Lieut. J. Ratter, R.A.R.O.; Lieut. H. N. W. Reid, R.E.; Lieut. H. R. L. Rice, R.E. (S.R.); Lieut. J. R. H. Robertson, R.E.; Major V. A. M. Robertson, M.C.

Lt.-Colonel J. R. Sadler, R.E. (S.R.); Mr. J. R. Sainsbury; Major H. F. Sanderson, R.E. (S.R.); Lieut. L. S. Sanson, R.E. (S.R.); Bt. Lt.-Colonel J. Scott, M.C., R.E. (S.R.); Capt. W. J. Scott, R.E. (S.R.); Colonel H. A. Short, M.C.; Mr. E. Smeardon; 2nd Lieut. R. F. J. Smeardon, R.E. (S.R.); Mr. W. A. Stanier, Capt. F. C. C. Stanley, R.E. (S.R.), Lieut. S. Stevens, R.E. (S.R.), Lieut. B. M. Strouts, R.E. (S.R.); Colonel G. S. Szlumper, C.B.E., T.D.; Lieut. D. R. Stenhouse, R.E.

Lt.-Colonel R. Tandy, R.C.S. (S.R.); Lieut. S. M. Taylor, R.E. (S.R.); Lieut. M. B. Thomas, R.E. (S.R.); Capt. R. Thompson, R.E. (S.R.); Colonel G. W. Tyrrell, D.S.O.; Major S. E. Tyrwhitt; Lt.-General W. K. Venning, C.B., C.M.G., C.B.E., M.C.; Major R. D. Waghorn, R.E.; Colonel Sir Herbert A. Walker, K.C.B., T.D.

Lt.-General Sir Reginald May said that although it was a rule at this dinner to have no formal speeches, he could not let the occasion pass without making some reference to the fact that this was the last occasion on which Sir Herbert Walker would preside over the dinner as their Honorary Colonel. He referred to Sir Herbert's long period of general managership of the London & South Western and Southern Railways, and the harmonious relations which existed between the Southern Railway and the War Office, and also to the great assistance he had given in the formation of the Transportation Units of the Supplementary Reserve. Sir Herbert Walker, in responding, gave some reminiscences of the transportation of the Expeditionary Force in the great war, and, more recently, of the formation of the Supplementary Reserve.

Lt.-General Venning made a humorous speech, and compared his experiences of railway travel in the past with that of the present day, somewhat to the detriment of the latter. Lt.-Colonel McMullen, Commandant, Railway Training Centre, Longmoor, gave an account of last summer's training and outlined the arrangements for next summer.

MODEL OF CYLINDER-LUBRICATING SYSTEM, L.M.S.R.—A very fine large-scale working model of the L.M.S.R. atomiser cylinder-lubricating system for locomotives, with which is incorporated the Silvertown mechanical lubricator, has been built to the instructions of Mr. W. A. Stanier, Chief Mechanical Engineer of the L.M.S.R. The model, which has been designed and made for the use of the L.M.S.R. Mutual Improvement Classes, is at present being shown at the British Industries Fair at Castle Bromwich, on Stand D.310 of Silvertown Lubricants Limited, and is well worth a visit. The lubricating system referred to was illustrated and described on pages 66 and 67 of THE RAILWAY GAZETTE, of January 14.

XUM

GREAT WESTERN RAILWAY COMPANY

Net revenue increased—Improved restaurant car catering—New coaches for heavy summer traffic—More diesels—Record engine-mileage—Effect of wage increases—Electrification to be investigated—South Wales traffic prospects

The annual general meeting of the Great Western Railway Company was held at Paddington station on Wednesday, February 23, the Rt. Hon. Viscount Horne of Slammanan, P.C., G.B.E. (Chairman of the company) presiding.

The Secretary (Mr. F. R. E. Davis) read the notice convening the meeting.

The Chairman: Ladies and Gentlemen, before I deal with the principal business of this meeting I am sure you would wish me to convey your congratulations to Lord Cadman on the honour of a Barony which H.M. the King conferred upon him last May. The services which Lord Cadman has repeatedly rendered to the State have well entitled him to special recognition by his Sovereign, and all of us who are his colleagues rejoice in this further mark of distinction. He has only now finished a task of high importance, as Chairman of the Committee appointed by the Government to inquire into civil aviation, and is prevented from being with us today owing to the demand upon his strength which this public duty has involved.

There have been no outstanding changes in the company's administration during 1937, but I should like to take this opportunity of mentioning that our Chief Accountant, Sir Ralph Cope, has intimated his desire to retire on March 31 next. At that date he will have completed over 61 years of service with the company, during 22 of which he has been our Chief Accountant. That is a remarkable record. Throughout this long period he has served the company faithfully and zealously and with an ability which has gained him an outstanding position in the whole railway world. For a long period he has been Chairman of the Railway Accountants' Committee and from the inception of the London Transport Pool in 1934 he has presided over the Accounts Advisory Committee. We shall all hope that he may be spared for many years to enjoy to the full the leisure which he has so justly earned.

To succeed Sir Ralph Cope as Chief Accountant we have appointed Mr. C. R. Dashwood, who was Assistant Chief Accountant for fourteen years, and has for the last four years been acting as Assistant General Manager.

Best Year Since 1930

As regards our accounts, it is gratifying for me to be able to tell you that, despite the continuance of political unrest in several parts of the world, and many embarrassing restrictions on international trading, the year 1937 was the best experienced by the company since 1930. There was a general improvement in the trade of the country which was particularly marked in the first half of the year. Production and employment in British factories as well as retail sales in our shops reached record figures, and the consumption of electricity was greater than we had ever previously experienced. Of more importance to our railway was the fact that the production of iron and steel surpassed all former limits, while the output and transport of coal—although less than in previous peak years—greatly exceeded the figure of the immediately preceding period. This expansion in business was undoubtedly assisted to some extent by the programme of rearmament adopted by the Government; but up till now the effects of this development have not been felt in anything like full measure. So far as we are concerned, indeed, the construction of a number of new Government works which are to be located on our system has only recently been commenced.

Large New Works Programme

There are several features in the accounts upon which it may be appropriate for me to make a passing comment. We expended on capital account during the year a sum of £696,000. This expenditure was mainly concerned with our large programme of new works—to some of which I shall refer later—and with improvements to rolling stock. We have written out of capital account £141,000 in respect of disused and displaced works—a sum which represents the original cost of certain small sections of branch lines which have been abandoned in recent years. Our investments in road transport companies have increased by £29,000 and the total return on them last year was 7¾ per cent., which is ¼ per cent. higher than in any previous year.

In making comparison of the receipts and expenditure for 1937 with the corresponding figures for the previous year, one must have regard to the fact that 1936 was a leap year, and that Coronation Day was a general holiday. There were thus two working days less in 1937 which adversely affected revenue. Moreover, there was a large increase in the cost of salaries and wages during five months of the year, whereas the benefit of the increase in rates and charges—to be mentioned later—only operated in the last three months of 1937. These circumstances combined with the gradually increasing effect of the rise in commodity prices account to a great extent for the relatively small increase in the net receipts for the second half of the year as compared with those of the first six months. Further, in the last three months of the year the upward movement in trade received a partial check, and in consequence the increase in gross receipts was little more than we hoped to get to cover the increased costs.

Increased Receipts

In the result the gross receipts from railway working in 1937 rose by £1,381,000, of which £979,000—or 70·8 per cent.—were absorbed by increased expenditure. The net receipts from railway working were thus £402,000 higher than in 1936 and, taking into consideration all the conditions with which we had to contend, I think you will agree that this result may be regarded as satisfactory. The gross receipts from the docks increased by £356,107, due mainly to a welcome recovery in the export coal trade and to greater activity in the iron and steel industry. Only 37 per cent. of the additional receipts was absorbed by additional expenditure, leaving a net revenue of £342,000, or an increase of £223,000. This improvement is very encouraging, but it still leaves us sighing for the yield of 1923 when the net revenue from the docks was £891,000.

The net receipts from hotels, refreshment rooms and restaurant cars were £38,000 less than for the previous year, due in the main to higher wages and the increased cost of commodities, but in part also to generous alterations which we made in the bill of fare of the restaurant cars with the object of making the meals more attractive. The consequence is that our profits have been adversely affected, but we hope that we have acquired fresh merit in the hearts —as well as in the stomachs—of the travelling public.

In total the net revenue of the whole undertaking in 1937 amounted to £6,886,505, an increase over 1936 of £571,676, out of which we have thought it desirable to appropriate £100,000 to a new works revenue suspense account. In our negotiations with the Government for the programme of new works, we indicated that in so far as these involved a replacement of existing assets—which, in accordance with our practice is charged to revenue—we intended to liquidate such expenditure over a period of ten years from the date of completion of each work. The amount which was outstanding at December 31 last was £218,568, and larger sums will have to be faced as the programme advances. In view of this liability we thought it would be prudent to build up a reserve so that in the event of a bad year we should be

able to make the necessary provision by an appropriation from the fund instead of charging it entirely to the revenue of the year.

Higher Dividend and Carry-Forward

With these observations it is now possible to sum up the year's results. Taking into account the balance of £76,793 brought forward and after deducting interest and dividends on loans, debenture and pre-ordinary stocks, the amount available for dividend on the ordinary stock is £1,868,767. This is sufficient to enable a dividend of 4 per cent. to be paid on it for 1937 as compared with 3 per cent. last year, and at the same time to increase the carry-forward by £74,785 to £151,578. This is the dividend which we now recommend to you for your approval.

Before leaving the accounts there are two further matters which I should like to mention. The contingency fund now amounts to £3,166,448, or £86,231 less than in the accounts of 1936; the reason being that we have charged against the fund part of the cost of the disused and displaced works which, as I had already said, have been written out of capital.

The other question relates to our investments. As regards our Investments in Government Redeemable and Guaranteed Securities, these stand in our books at more than the market value on December 31 last; but as the securities have fixed redemption dates and our probable liabilities will, as far as can be forecast, more or less coincide with their maturity value, which is higher than the book value, we did not consider it necessary to provide for the existing depreciation. We have, however, made full provision for depreciation on such of our investments as have no fixed date for redemption.

Passenger Traffic

The number of passengers conveyed over the company's system in 1937 (excluding season ticket holders) shows an increase of 2,774,000, and the receipts therefrom an increase of £404,000. Revenue from season tickets rose by £10,000 and from mails, parcels, and miscellaneous traffic by £13,000. The total passenger train receipts amounted to £11,489,000, or £427,000 more than in the previous year. This additional revenue was earned with an increase of only 58,000 coaching train-miles, but in order to meet summer traffic requirements we have had to provide 225 additional coaching vehicles. It is always a difficult problem to decide on the extent to which we are justified in providing additional vehicles which can only be used during peak periods, and we try to solve the problem as best we may, with a due regard to the comfort of the public on the one hand and the interests of the stockholders on the other. During the month of August we usually carry nearly double the number of passengers travelling in February, and as the granting of holidays with pay, which has become a predominant feature of recent labour negotiations, will undoubtedly result in an increase in summer traffic, it is hoped that some steps will be taken to ensure that the holidays are spread over a reasonably long period, so that the difficulties which all transport undertakings experience in dealing with traffic at peak periods may not be accentuated.

During the year under review the receipts from holiday season tickets, camp coaches, organised party traffic, and the reservation of seats, were in every case the highest on record.

Economy on Diesel Cars

The new diesel car with trailer for passenger traffic which we introduced experimentally on the Lambourn Valley branch last April has proved a success and has enabled appreciable working economies to be effected. We have now altogether 18 of these cars, which run nearly one million miles per annum, and whilst the original intention was to use them to provide additional services where the traffic was insufficient to justify the working of a train, our experience shows that, owing to the increasing cost of operating steam locomotives, considerable economy can be effected by replacing them with diesel cars on certain sections of the line. We are therefore now negotiating for the purchase of 20 more cars somewhat similar to those already in use.

Our carryings of general merchandise and mineral traffic, which have been gradually increasing since 1932, show a further improvement of 2,000,000 tons, which yielded, last year, an additional revenue of £379,000. The proportion of receipts from goods traffic in relation to other traffic, was indeed higher than in any year since the re-grouping of the railways.

Iron and Steel

Iron and steel traffic increased by 924,000 tons, or 18 per cent., but although the output of pig iron and steel ingots from Monmouthshire and South Wales was 284,000 tons greater than in 1936, the total production in those areas represented a smaller proportion of the output of the whole country than in 1936 and a much lower proportion than in 1929. The comparable figures for pig iron were 9·71 per cent. last year compared with 12·21 per cent. in 1929, and for steel ingots and castings 20·30 per cent. against 24·24 per cent. There should, however, be a considerable improvement in these figures when Richard Thomas & Company's new works at Ebbw Vale come into production this year.

There was also a substantial increase in the output of china clay from Devon and Cornwall, which reached nearly 1,000,000 tons. This was the highest level attained in the history of the industry. Of this total 686,000 tons were shipped at Fowey jetties, an increase of 123,000 tons compared with the previous year.

Some years ago when a famous statesman in a public speech said that he expected developments in the cultivation of broccoli he was greeted with much satirical laughter. Was England to be fed on broccoli? But he guessed perhaps better than he knew, and we share in the benefits of his prediction. Last year the broccoli traffic from Devon and Cornwall created a record; over 36,000 tons were conveyed by rail, and it gave us a revenue of £73,600, or £10,000 more than in 1936.

Coal Traffic Recovery

In 1936 our coal traffic showed a decrease of over 1,000,000 tons, but this deficiency has now been more than retrieved, the figures for last year showing an increase of 5,000,000 tons, and an additional revenue of £578,000. The total tonnage conveyed over the company's system was 46,367,000, of which 25,081,000 tons were for landsale, while 21,286,000 tons represented coal for shipment. Landsale coal, which is more remunerative owing to the average longer haul, increased by 1,235,000 tons, and shipment coal by 3,748,000 tons.

To cope with the larger volume of goods traffic to which I have referred we had to run 974,000 more freight train-miles than in 1936, but this reveals a much smaller percentage increase than the corresponding increase in our tonnage of freight traffic.

Economy in Operation

There are some interesting features in connection with the general operating results which deserve mention. The coal consumption per engine-mile for all services was the lowest we have ever recorded, and the paying load hauled per engine hour and the daily mileage run by engines in use were both greater than ever before. The total engine-mileage was also a record; and, although the additional traffic handled made it necessary to add to our rolling stock, we still have 395 fewer locomotives and railcars, 1,262 fewer coaching stock vehicles and 4,863 fewer wagons in service than in past years. These figures bear testimony to the economical manner in which the traffic has been worked and they reflect great credit on the company's staff.

The volume of traffic dealt with at our South Wales docks still remains at a low level in comparison with former days, but it is some consolation to know that, whereas the coal shipped from Bristol Channel ports in 1936 was 2,206,000 tons less than in the previous year, this loss was more than recovered in 1937, when there was an increase of over 3,700,000 tons Total exports increased by 3,892,000 tons, and imports by 862,000 tons, the latter being largely accounted for by iron and copper ore, iron and steel billets, and general merchandise.

XUM

The total receipts from the dock undertakings were higher by £356,107, of which about £200,000 can be attributed to the improvement in the coal trade, and £150,000 to other traffics. An analysis of our coal exports shows that we shipped 1,338,000 tons more to France, 965,000 tons to Italy, 223,000 tons to Argentina, and 121,000 tons to West Africa. On the other hand, there was a decrease of 93,000 tons in shipments of anthracite to Canada—where Russian cargoes seem to have stolen some of our trade—and smaller decreases to a number of other countries.

Proportion of Wages to Receipts

When we turn to the question of expenditure, the largest item which presents itself is that of wages. From every pound of receipts which we earn, wages take eleven shillings and coal and other materials three shillings and fivepence. These with rates and sundry items bring our expenditure per pound of receipts up to 15s. 11d., leaving 4s. 1d. for interest on debentures and dividends on capital. It will thus be seen that we are materially concerned in the wage bill. In the early part of April last year, claims were submitted by the railway trade unions for the termination of the percentage deduction from salaries and wages and the restoration of standard rates of payment for night and Sunday duty. In addition, claims for certain new conditions were submitted by the unions, including a minimum rate of pay of 50s. per week by the National Union of Railwaymen, two weeks' holiday with pay by the Associated Society of Locomotive Engineers and Firemen, and a 36-hr. week by the Railway Clerks' Association. The annual cost of conceding these claims would have run into many millions of pounds, and in these circumstances it was agreed by all parties to submit the matter to the Railway Staff National Tribunal.

After a hearing lasting six days, the tribunal, under the chairmanship of Sir Arthur Salter, decided that the percentage deduction from earnings should cease and the standard rates for night and Sunday duty be restored as from August 16, 1937. They also awarded an increase of 1s. a week to adult staff in conciliation grades whose base rate was less than 45s. a week, with an increase of 6d. a week to those with base rates of 45s. In addition a former decision of the National Wages Board, under which new entrants on and after February 1, 1926, were not entitled to cost-of-living bonus, was cancelled, and an additional day's leave with pay was granted to all conciliation and salaried staff required to work on Whit Monday or August Bank Holiday.

Wage Increases

An application on behalf of the railway shop staff for the termination of the percentage deduction from earnings and for various other items, including a 40-hour week, increase in rates of pay of 1d. an hour, a minimum rate of 50s. a week and 12 days' annual leave with pay, was dealt with by the National Railway Shopmen's Council. The claim was settled by an agreement to terminate the percentage deduction, to grant one week's annual leave with pay (commencing in 1938) and to increase by 1s. and 6d. per week, respectively, the rates of pay of staff graded at 43s. 6d. and 44s. 6d. per week.

Settlements having as their basis the cessation of the percentage deduction were also effected with the other groups of staff, and the deduction has now ceased to apply to any grades. Further, during the past twelve months, approximately 25,000 of our staff have received increased wages in accordance with sliding scale arrangements which are based on the cost-of-living figures published by the Ministry of Labour. On the assumption that the cost of living continues throughout 1938 at the level at which it stood at the beginning of the year, viz., 60 per cent. over the pre-war level, the increased cost of all the foregoing items for a full year will amount approximately to £695,000, and for the current year represent an additional expenditure of approximately £475,000, as compared with 1937.

Pension Scheme for Female Clerks

You have doubtless observed in the report a reference to a proposed Pension Fund for our Female Clerks. The employment of female clerks on a large scale by this company virtually started during the war, when their services were particularly valuable. Since then many of them have remained with us, and they now form a permanent part of our organisation. Owing to the comparatively short time which has elapsed, very few of these female clerks have reached retiring age, and the problem of providing for the few who have already been retired has not been difficult. Representations have, however, been made to the directors from time to time urging the establishment of a properly constituted pension fund, to which the female clerks may contribute a fixed percentage of their wages in return for an appropriate pension benefit. The directors feel that the appeal should be recognised and they are satisfied that the formation on a sound actuarial basis of a contributory pension fund for this grade of employee is justified and expedient.

The board had foreseen the possibility of an ultimate liability for pensions to retired female clerks, and a reserve to meet this contingency has been built up gradually over a period of years. This reserve will go a long way towards establishing the fund on sound lines. A formal resolution on the matter will be submitted to you later, and I feel sure that you will approve of the proposal in principle, and will agree that the company should extend to it such assistance as may be necessary to enable it to be established on a proper financial footing.

The rapid rise in the price of materials in the early part of 1937 made it necessary for us to reconsider some of the schemes included in the large programme of new works which, as I told you last year, we propose to carry out under the financial arrangements which we entered into with His Majesty's Government in November, 1935. Independently, however, of the question of cost, we had come to the conclusion that, owing to the general improvement of trade conditions and the decision of the Government to embark upon an extensive rearmament programme, the national interests would be better served by deferring to slacker times such of the schemes as were designed solely to meet future requirements and were not necessary for immediate needs.

Dawlish Avoiding Line Deferred

Among the works which fall within this category are the Dawlish deviation line; the new railway from St. Germans to Looe; the reconstruction in whole or part of Exeter, Oxford, Llanelly and Weymouth stations; and other proposals of a minor character, the aggregate cost of which is in the neighbourhood of £2,500,000 to £3,000,000. It has been necessary to obtain the formal sanction of the Minister of Transport to the completion date for these schemes being extended to January 1, 1945, and the Minister has given his consent, subject to an understanding that at any time after July 1, 1939, he may call upon the company to commence forthwith the work on some of the schemes.

The remaining works in the programme include the new line between North Acton and Denham, in extension of the Ealing & Shepherds Bush Railway, which is an important part of the general scheme for improving facilities in the London Transport Area. The quadrupling of the line between Wood Lane and North Acton was completed during the year, and a contract has been let for the section of the new line between North Acton and Greenford, a distance of about 3½ miles. Other schemes which are going forward include the provision of a new carriage repair shed and the rearrangement and extension of the carriage sidings at Old Oak Common; the construction of a new goods shed and the remodelling of the goods yard at Hockley; the construction of new carriage sheds at Swindon, Caerphilly, and Cherry Orchard; and the modernisation and enlargement of the hotel at Paddington.

A number of the smaller works were completed during the year, including the partial doubling of the Barnstaple and Minehead branches, and the provision of a new goods depot at Ponsandane.

Road Transport Wages

Now I refer to an important question about road transport. The past year has seen important developments in the direction of securing a greater measure of co-ordination

between the various forms of goods transport, which, it has long been recognised, cannot be made really effective until the road haulage industry has been placed on an organised basis. A Government committee under the chairmanship of Sir James Baillie has been investigating the problem of wages and conditions of service in relation to road hauliers, and in their report, which was issued last April, they expressed the view that the present statutory provisions regarding "fair wages" have been a great source of inconvenience and misunderstanding. Among the recommendations which they have made is one that new regulative machinery should be set up to deal with such matters and that the enforcement of regulations made through this means should in future be a condition of every "A" and "B" licence granted under the provisions of the Road Traffic Acts. The allied question of services and rates to apply to the road haulage industry has been the subject of consideration by the Transport Advisory Council, who made an exhaustive report to the Minister in July last.

Rates Structure for Road Transport

Among the important recommendations which they make is that legislative effect should be given at the earliest possible moment to the proposals of the Baillie Committee, already referred to, and they expressed the view that there can be no effective co-ordination between road and rail transport until this is done. As a further step towards the ultimate co-ordination of all forms of goods transport, they recommend the setting up of a rate structure for the road haulage industry—the rates fixed in pursuance of it to be based solely on factors affecting road transport regardless of the rates prevailing in other forms of transport.

The council also recommends that when once these rates have been fixed, it should be a condition of the licences that all traffic conveyed by the hauliers should be charged for at the recognised scales. As regards co-ordination with other forms of transport, the council considers that this should be brought about through voluntary agreements and emphasises that progress in this direction must necessarily be retarded until road transport is organised on an effective basis.

The whole matter is now under the consideration of the Minister of Transport, who has announced the Government's general approval of the recommendations which have been made and their intention of introducing the necessary legislation in due course, after consulting the interested organisations on points of detail. The matter is one of urgency from the point of view not only of the interests of the road hauliers, but of all those engaged in other forms of transport, and as the subject is one of national importance, it is desirable that every endeavour should be made to deal with the recommendations at an early date.

I am glad to see from a recent pronouncement by the Minister of Transport that the Government apparently intends to do this, at any rate, so far as the Baillie Committee's recommendation is concerned. It is a matter in which, of course, we have taken an intense interest, and we believe that the future of the railways, as well as of the road transport community, will gain a great advantage from this new form of organisation which is suggested.

The receipts for the last three months of the year were augmented by the increase authorised in July last by the Railway Rates Tribunal, as the outcome of the duty which devolves upon it under Section 59 of the Railways Act, 1921, to review each year the railway companies' standard and exceptional charges and to make such modifications as they may think necessary to enable the companies to earn their standard revenues. To assist the tribunal in coming to a decision the railway companies are required to submit their accounts and statements and are usually asked whether they have any proposals which they desire to put forward. For several years the companies have intimated that although clearly justified they were doubtful whether a general increase in charges would result in any material improvement in their financial position; this year, however, they felt compelled, in view of the continued revival in trade, to inform the tribunal that in their view a moderate general increase of charges would be likely to result in such an improvement, and they accordingly suggested that an increase of 5 per cent. should be made.

Increased Charges

After a prolonged hearing the tribunal reached the conclusion that the deficiency in the railway companies' net revenues was not due to any lack of efficiency or economy in management. They pointed out that the provisions of the Railways Act appeared to indicate that the legislature regarded the realisation by each company of its standard revenue to be in the public interest—a very notable pronouncement by the tribunal—and they decided that as an increase of 5 per cent. applied so far as practicable, to all standard and exceptional charges, would enable the companies more nearly to earn the Standard Revenues, the charges should be modified accordingly as and from October 1, 1937.

Although, since the date when the case of the Railway Companies was brought before the Tribunal, the new burden of increased wages, to which I have already referred, has been imposed upon us, it is a matter for gratification that we have at least some prospect of additional revenue with which to meet it.

Electrification

We are, however, watching with some anxiety the upward trend of coal prices. Where coal forms so large a portion of our traffic, it is clear that the railway, and the coalfields, can only prosper in unison, but there is obviously a limit to what we can afford to pay. Every shilling of increase in price means an additional cost to us of over £100,000 per annum, and, whilst we recognise that some increase in coal prices was right and proper in order to give a decent remuneration to the miner and a reasonable profit to the colliery owner, the recent increases in coal prices will represent a very substantial addition to the burdens which we have to face in the current year. We felt therefore that the large increase in the cost of operating steam locomotives made it incumbent upon us to explore the possibility of effecting economies by substituting other forms of traction where the conditions are favourable. We have accordingly engaged a firm of eminent consulting electrical engineers to prepare a scheme for the electrification of part of our system. We have under consideration at the moment the section of the line which runs between Taunton and Penzance. This section, although not one over which electrical working is likely to give such good results as in a suburban area, is undoubtedly the most suitable for our immediate purpose, as it readily lends itself to further extensions if the experiment proves to be successful. It is, of course, not possible at this stage to form a definite opinion as to the probable result of the investigation, but any decision at which we might arrive could not be carried into effect during the current year.

South Wales Activity Improves Outlook

You will no doubt expect me to say something about the outlook for the company in 1938. However rash it may appear to be cheerful during such a recession from the peak of last year as we have recently witnessed, I confess that I am not afflicted by an undue anxiety, so far as our railway is concerned. In spite of the apparent set-back in trade, the volume of traffic dealt with by us since the beginning of the current year does not show any diminution when compared with the corresponding weeks of last year. There are in fact good reasons for anticipating a further improvement in our business. During the year, negotiations were completed for the establishment of 73 new factories on our system, some of which are already in production.

Lord Portal (to whom South Wales owes a great deal of gratitude for his activities on their behalf) tells me that with the assistance of the Government, the Nuffield Trustees, and the Special Areas Reconstruction Association, companies with a total capital of nearly £2,000,000 are being set up in South Wales. These should reach full production during the current year, and give employment to about 6,000 people. Richard Thomas and Company's steel works at Ebbw Vale will also be completed this year, and we expect to handle

XUM

a large volume of traffic in connection with them, whilst amongst other important new factories now under construction in South Wales are Pilkington's glass works at Pontypool, the Aberdare Cable Works at Aberdare, and the British Aluminium Company's works at Newport. In addition, the British Oxygen Company has announced its intention of erecting a large factory in our dock area at Port Talbot, and negotiations for the establishment of a number of other important works are in hand. These projects are all additional to the programme of new munition and aircraft factories in South Wales which is being directly undertaken by His Majesty's Government and from which we expect to derive considerable benefit.

Results should not Deteriorate

Even, however, if our anticipations of additional traffic are not realised and the volume merely remains at last year's level, the increase in charges should, when the year is completed, yield us a sufficient additional revenue to meet the increased cost of salaries and wages as well as the rise in the price of materials, particularly as we are fortunate enough to hold considerable stocks and have contracts for further supplies at lower prices than obtain today.

No man would be so imprudent as to predict what troubles may emerge in the near future from the clash of rulers or the rivalries of nations. These are factors which would upset all calculations. Leaving such possible catastrophes aside, reflection must remind us that there is still a vast amount of work in this country waiting to be done and, provided that we keep our courage and our confidence in ourselves, there is no reason why this year should not as a whole be as good as last.

In concluding this address, I desire to express your gratitude and my own to the administrative staff and all our employees in every rank and grade for the fidelity with which they have served the company during the past year.

Before formally moving a resolution for the adoption of the accounts, I shall allow an opportunity for anybody who wishes either to make a comment or to ask a question.

Remarks of Shareholders

Mr. W. J. Stevens said that before proceeding with the business of the day he felt that the shareholders present, and the many thousands who were absent, would like to take that, the first opportunity, of congratulating the Chairman upon the honour conferred upon him by His Majesty. The G.W.R. had always been known as a very happy family and the shareholders might therefore claim to participate in a minor degree in the honour which had been conferred upon the Chairman.

Mr. Stanley Smith asked whether the additional sum of £400,000 represented by stores meant larger quantities or enhanced values.

Mr. John Phelps said it was gratifying to the stockholders to have the increased dividend and to know that it had been earned at the same time as reductions in the payments to the staff had been restored. One item in the Chairman's speech which he felt was disquieting was the suggestion regarding a large scale programme of electrical working on the main line. He quoted figures which he suggested showed that the G.W.R. Company's present electrical working was more expensive than steam working and he queried the expediency of a change. A further point was that electrical working meant standardising the future for a long time.

Mr. Ashley Brown congratulated the board upon another not unsatisfactory year, and supported the previous speaker on the subject of electrification. He said that on February 14 *The Times* stated that the Southern Railway was curtailing its electrification programme. On the following day, the same journal quoted a statement of the Minister of Transport that he had a report showing that steam was the most efficient and most economical form of railway working. Only three days later the G.W.R. came out with a statement that it was considering electric traction because of the increased cost of steam working. He found it extremely difficult to reconcile these three different statements. He advocated greater voluntary co-operation between the great railways, a policy which he considered far preferable to compulsory nationalisation or even the placing of the railway companies under the control of some national transport board as some people desired.

Mr. W. H. Silcocks compared the safety of railway and road travel. In 1936 he said there was but one death among the 200,000,000 who travelled on British railways. Then in February a year ago there were four railway accidents with a few killed and a few injured, yet like a bolt from the blue, it was suggested in the House of Lords that legislation was required on the railways. With regard to road transport, in August of last year, there were 612 killed and in October 618 killed. In ten years there had been 66,000 killed and 2,000,000 injured, and since automobiles had been on the road there had been over 4,000,000 killed.

The Rev. Howard P. Hart asked if it would be possible for the historic names of the G.W.R., namely, Brunel, Gooch, and Saunders, to be revived in the naming of locomotives.

Chairman's Reply

The Chairman: If there are no more questions or comments, perhaps you will forbear with me while I reply to those which have been raised.

The last suggestion, as to the naming of engines after the famous names of Brunel, Gooch, and Saunders, is one which would very naturally appeal to any Great Western audience; but, on the other hand, these names are perhaps already so well enshrined that they might not require any special advertisement. However, we shall take the point into consideration.

The first question that was asked was with regard to the increase in the amount of stocks of materials. The answer to that question is that it is entirely attributable to enhanced prices, and not to any increase in quantity.

In reference to the question which was put with regard to electrification, we are very much obliged to Mr. Phelps for the interesting information which he gave. I would only venture to make this demur, that he cannot estimate the cost of operating by electricity a lengthy section of the system by the expense of the small portion in which we are already concerned. Not only does that form an insufficient test but, in addition, it has to be borne in mind that the cost of electrification is considerably less now than it was some years ago. A reference to the figures of the Southern Railway Company would, I believe, make it perfectly obvious that the cost of operating electric trains does not reach the figures to which this gentleman referred. But let me say this, in answer both to him and to Mr. Ashley Brown, that we are not fools in this matter. We have committed ourselves in no way at all. All we have done up to now is to engage a very distinguished firm to report to us on the cost which might be involved and what operating advantages and economies we would be able to obtain from electrification. What we are in fact embarking upon is a very diligent enquiry into this matter, and I think the meeting will agree that we are justified in looking round in every way to effect economies where we can, and undoubtedly the price of coal at the present time makes it incumbent upon us to see what can be done.

Mr. Ashley Brown made some demand for co-operation. He may certainly assume that we are all in favour of the utmost amount of co-operation that can be secured between the great railway companies; and I think that, if you consider what was the state of the country in respect of its transport some years ago, you will realise the vast advance that has already been made in the direction of co-operation. To me it is a miracle that we have been able to achieve so much; but, of course, we are not resting upon our laurels in that regard. We shall do everything we can to increase still further that co-operation. What I have said in my speech, I hope, has indicated to you that we do not mean merely to co-operate with the other railways but we would also desire to see co-operation and co-ordination amongst all the transport systems of the country. That is why we welcome the legislation which, as we understand, the Government is shortly to bring before Parliament.

There was only one other questioner; in fact, I do not think he questioned anything at all. He indulged in a lyrical

tribute to the magnificence of railway transport as compared with other forms, and in particular he showed his love and affection for the Great Western Railway Company. For that we thank him, and upon that note I think I may close.

Resolutions

I shall now move the resolution: " That the report of the directors and statement of accounts for the year ended December 31, 1937, be received and adopted."

Lord Palmer: I have much pleasure in seconding that.

The motion was put to the meeting and declared carried unanimously.

The Chairman: I beg to move: " That dividends be paid for the half-year ended December 31, 1937, of £2 10s. per cent. on the consolidated guaranteed stock; £2 10s. per cent. on the consolidated preference stock; and £2 10s. per cent. on the five per cent. redeemable preference stock (1950). That a dividend of £3 10s. per cent. for the same half-year be declared on the consolidated ordinary stock, making with the interim dividend of 10s. per cent. paid for the half-year ended June 30 last £4 per cent. for the year. That such dividends be paid on and after the 3rd proximo to the proprietors who were registered in the books of the company when balances were struck on the 21st ultimo."

Lord Palmer: I have pleasure in seconding that.

The motion was put to the meeting and declared carried unanimously.

The Chairman: Then I beg to move: " That this meeting approves the establishment of a Contributory Pension Fund for female clerks in the employ of the company and authorises the directors from time to time to contribute out of the funds of the company such sums of money as upon actuarial advice they may deem necessary to establish the fund on a sound basis."

Lord Palmer: I have very much pleasure in seconding that.

The motion was put to the meeting and declared carried unanimously.

The Chairman: I call upon Mr. Stevens.

Mr. W. J. Stevens: My Lord Chairman, ladies, and gentlemen, I move: " That the following directors now retiring by rotation be and they are hereby re-elected: The Rt. Hon. Viscount Horne of Slamannan, P.C., G.B.E.; The Rt. Hon. Lord Palmer; Sir Percy E. Bates, Bt., G.B.E.; The Rt. Hon. Lord Glanely; Sir Henry Mather Jackson, Bt., C.B.E.; Cyril E. Lloyd, Esq.; Geoffrey F. Luttrell, Esq.; Sir W. James Thomas, Bt." If some shareholder will second that, I will put it to the meeting.

Captain J. C. Newland: I have very much pleasure in seconding that.

The motion was put to the meeting and declared carried unanimously.

The Chairman: Thank you very much, ladies and gentlemen. I call upon Colonel Brooke-Hitching.

Colonel Brooke-Hitching: Mr. Chairman, ladies, and gentlemen, I beg to move: " That the following gentlemen be and they are hereby appointed members of the Audit Committee for the ensuing year: Sir George Lewis Barstow, K.C.B.; Sir W. Edgar Horne, Bt.; Reginald J. R. Loxdale, Esq.; D. Rupert Phillips, Esq.; W. J. Stevens, Esq." Will some shareholder second that proposal?

Sir Robert Vaughan: My Lord, I have very great pleasure in seconding that.

The motion was put to the meeting and declared carried unanimously.

The Chairman: Ladies and gentlemen, that concludes our business, and I have to thank you for your attendance today and for the great patience and courtesy with which you have listened to my remarks.

Australian Railway Gauges

In the course of an article which Mr. Harold W. Clapp, Chairman of the Victorian Railway Commissioners, contributed to the special Australian number of *The Times* on January 26 last, the gauge position was lucidly summarised. The following extracts from that article, which was entitled " Railway Development," set out both the origin of the different gauges in various Australian States and also the magnitude of unification as a solution to the problem.

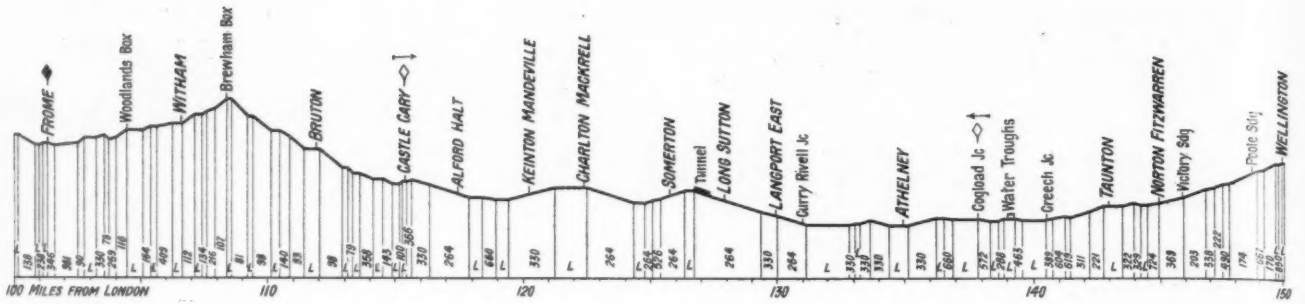
" Australia owes a good deal of her national significance to railway development. For a considerable period after the opening in 1854 of the first Australian railway—2½ miles of track between Melbourne and Sandridge (now Port Melbourne)—railway construction was necessarily limited by the needs of a small and scattered population. Subsequently the construction of a network of railways was vigorously proceeded with, and in a little over 60 years the Continent had constructed 27,000 miles of railway, appproximately 17,500 miles of which was in the three Eastern States of New South Wales, Victoria, and Queensland. The national potentialities of the achievement would have been much greater, however, if in the beginning there had been unanimity on the width of railway gauge. Differences in gauges throughout the five mainland States of the Commonwealth have retarded that Continent-wide co-operation which is essential to economic transport and to efficient organisation in the event of war.

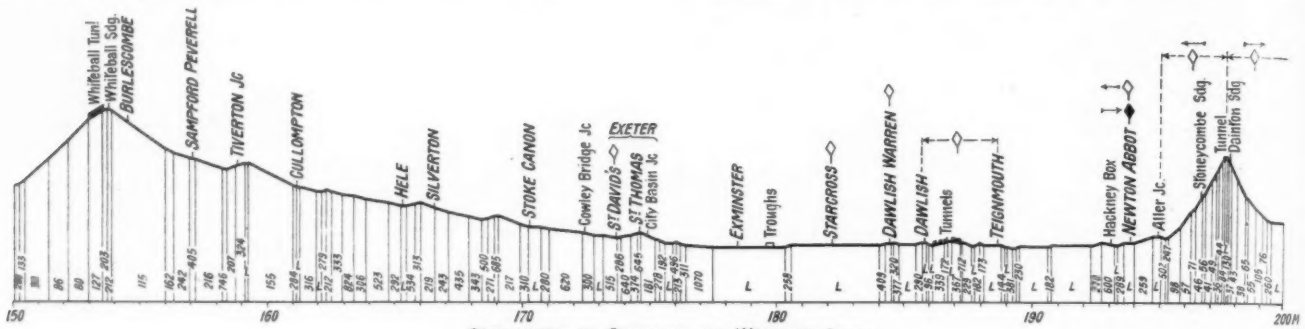
" In 1846 Mr. Gladstone, then Colonial Secretary, recommended to the Governor of New South Wales that the 4 ft. 8½ in. gauge should be adopted. In 1850 the engineer to the Sydney Railroad & Tramway Company recommended the 5 ft. 3 in. gauge. In 1852 an Act of Parliament made this gauge compulsory for New South Wales, and the Governors of Victoria and South Australia were advised of the fact. In the same year, however, the company changed its views. The previous Act was repealed, and another Act was passed adopting the 4 ft. 8½ in. gauge. The two companies in Victoria, which had placed large orders for equipment for the 5 ft. 3 in. gauge, decided to adhere to that gauge. In South Australia also the broader gauge was retained. The consequence of this confusion is that the New South Wales railway system is 4 ft. 8½ in. gauge while Victoria has 5 ft. 3 in. The South Australian system has two gauges, 5 ft. 3 in. and 3 ft. 6 in., the latter having been adopted with a view to economy in construction. Western Australia adopted the 3 ft. 6 in. gauge for economic reasons. The 3 ft. 6 in. gauge was adopted at the outset in Queensland as being best suited to its requirements. The East—West railway from Port Augusta (S.A.) to Kalgoorlie (W.A.) built by the Commonwealth is 4 ft. 8½ in.

" The question of unification of gauges has been reviewed on a number of occasions. In 1921—the last occasion when it was exhaustively investigated—a Royal Commission estimated that it would cost £57,200,000 to covert the whole of the non-standard gauges to 4 ft. 8½ in. A less ambitious scheme estimated to cost £21,600,000 provided for a standard gauge on the main route from Perth to Brisbane and the conversion of all the 5 ft. 3 in. lines in Victoria and South Australia to 4 ft. 8½ in. As the years have gone by, the disabilities associated with the varying gauges have become more and more pronounced. The need for uniformity is now recognised as one of the highest national importance. A 4 ft. 8½ in. line has been built from Grafton (N.S.W.) to Brisbane, giving uniformity from Brisbane to Albury (N.S.W.), and more recently the 4 ft. 8½ in. gauge has been extended from Port Augusta to Red Hill (56 miles), and the South Australian Government has extended the 5 ft. 3 in. gauge for 28 miles to Port Pirie."

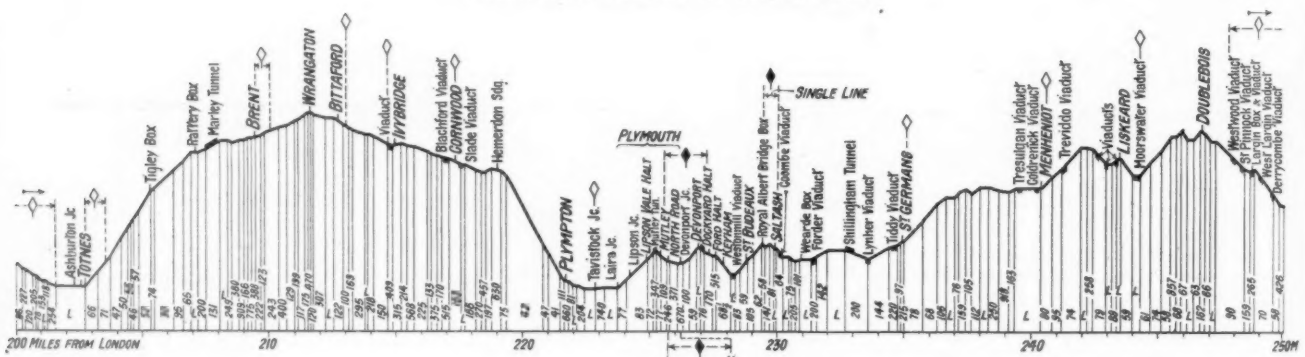
THE MAUCH CHUNK " SWITCHBACK."—This famous U.S.A line, which was one of the first railways to be opened in that country, has now completed its career, for we learn that in the autumn of last year it was sold by auction to a Pottsville junk dealer, and that the removal of the rails and equipment has been nearly completed. This line, which was opened in 1827, formed the subject of an editorial note in our issue of December 13, 1935.

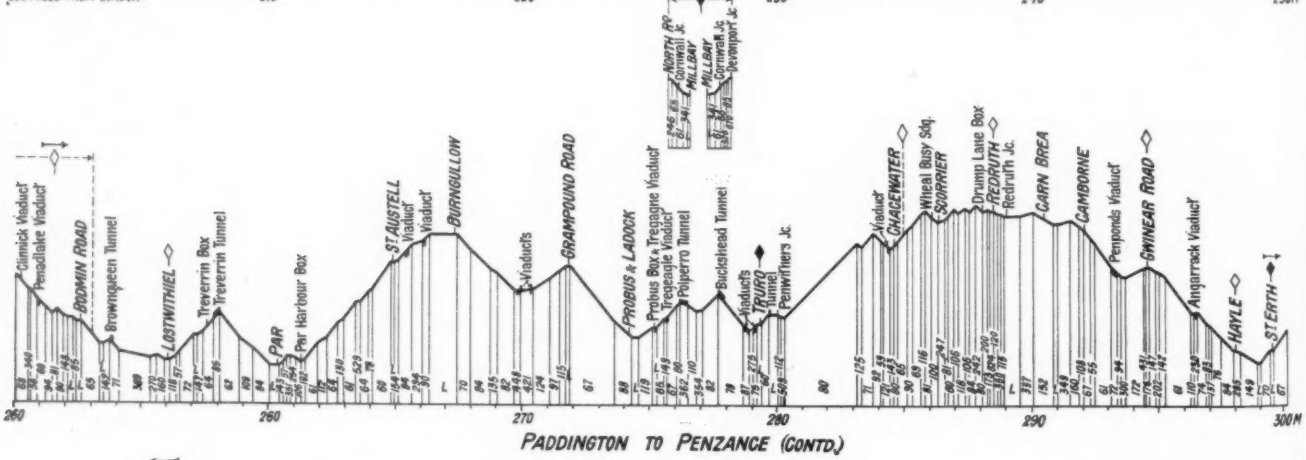
XUM





PADDINGTON TO PENZANCE VIA WESTBURY (CONTD.)





PADDINGTON TO PENZANCE (CONTD.)

PADDINGTON-PENZANCE (CONTD.)

Gradient profiles of the West of England main line, west of Taunton, G.W.R., the electrification of which is being investigated. (Reproduced from "The Railway Magazine: Gradients of the British Main Line Railways," price 5s. net.) *See article on opposite page*

G.W.R. Taunton—Penzance Electrification Investigation

Last week the Great Western Railway announced that, in view of the increasing cost of steam working, Messrs. Merz & McLellan, of 32, Victoria Street, Westminster, S.W., had been requested to prepare a scheme for the electrification of a part of the system, as it was thought that the substitution of electric traction might enable considerable economies to be effected.

This statement was elaborated on Wednesday by Lord Horne in his speech at the annual meeting of the G.W.R., when he said that the company was watching with some anxiety the upward trend of coal prices. Where coal formed so large a proportion of the traffic, it was clear, he added, that the railway and the coalfields could prosper only in unison, but there was obviously a limit to what the company could afford to pay. Every shilling per ton of increase in price meant an additional cost to the G.W.R. of over £100,000 per annum, and whilst the company recognised that some increase in coal prices was right and proper in order to give a decent remuneration to the miner and a reasonable profit to the colliery owner, the recent increases in coal prices would represent a very substantial addition to the burdens the company had to face through the current year.

"We felt, therefore," Lord Horne continued, "that the large increase in the cost of operating steam locomotives made it incumbent upon us to explore the possibility of effecting economies by substituting other forms of traction where the conditions are favourable. We have accordingly engaged a firm of eminent consulting engineers to prepare a scheme for the electrification of part of our system. We have under consideration at the moment the section of the line which runs between Taunton and Penzance. This section, although not one over which electrical working is likely to give such good results as in a suburban area, is undoubtedly the most suitable for our immediate purpose, as it readily lends itself to further extensions if the experiment proves to be successful." Lord Horne added that it was not possible at this stage to form a definite opinion as to the probable result of the investigation, but any decision at which the directors might arrive could not be carried into effect during the current year.

In the subsequent discussion a shareholder raised the point that electrical working on the existing electrified portions of the G.W.R. was considerably more expensive than steam working. Mr. Ashley Brown, of the British Railway Stockholders Union Limited, contrasted the statement that the Southern Railway was curtailing its electrification programme with the G.W.R. announcement.

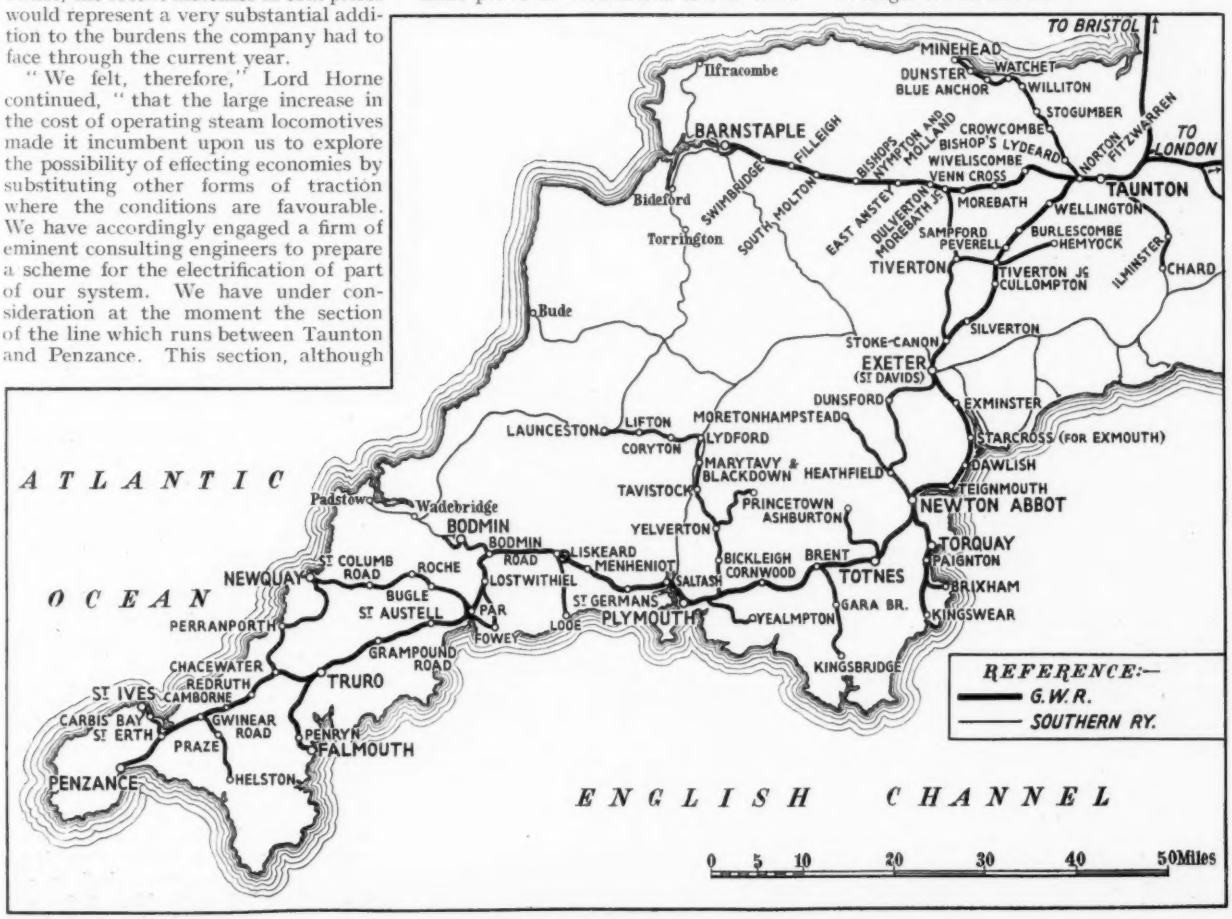
Lord Horne, in reply, pointed out that any estimate of the cost of operating an electrified system which was based on the results of the small portion of the G.W.R. electrical working, must prove an insufficient test of what costs would be. It was undoubted that the cost of electrification was considerably less now than it was some years ago. Lord Horne also emphasised that the G.W.R. had committed itself in no way at all. All that had been done up to now was to engage a very distinguished firm to report upon what electrification would cost and what operating advantages and economies the company would be able to obtain. Undoubtedly the price of coal at the present time made it incumbent to see what could be done, and if the electrification of some portion of the line would enable the company to rid itself of a portion of these costs, it was a venture that was well justified.

Coal Prices

The average net selling values per ton of coal at the pit head as given in the last annual report of the Secretary for Mines for the years 1934–1937 are :—

1934	...	...	...	12s. 11d.
1935	...	...	...	13s. 0d.
1936	...	...	...	14s. 0d.

The annual figures for 1937 are not yet available, but the average pit head selling price for the quarter ending September 30, 1937, was 17s. 1·47d., according to the Statistical Summary issued by the Mines Department in January, 1938. These figures are averages for all classes.



Sketch map of the G.W.R. lines west of Taunton

Transport Publicity

Mr. C. G. G. Dandridge, Advertising Manager, L.N.E.R., on the history of railway advertising and trend of development

The development of railway publicity from the days of the first excursion train was outlined by Mr. C. G. G. Dandridge, Advertising Manager, L.N.E.R., in a lecture delivered before the Institute of Transport on Tuesday, February 22. Most of the early publicity, he said, was inspired by the speculative trains run by the original tourist agents. In those days the railways formed a monopoly of quick transport, their only competitors being the waterways, including navigable rivers and canals, and the slow-moving horse traffic of the highways of the period. It was thus left to the tourist agents to encourage the travel-habit by railway and to excite the imagination of a public as yet unaccustomed to travel unless by sheer necessity or the exigencies of business.

The printing of handbills and letterpress posters formed an important part of the cost of this advertising, and the tourist agents or travel managers of those times found it worth while to equip their establishments with printing-presses for this purpose. Some of these presses were still running and were included, on a commercial basis, among the large number of printers who served the advertising departments of the railways today. In those early times the newspapers also were used by the tourist agents, and summary-lists of cheap fare trains appeared in the press in conjunction with the handbill and poster advertising, much as they did today.

In the next decade the railways themselves realised the importance of this speculative business and commenced to do much of it themselves. It was in this period that the original forms of direct railway advertising, handbills and posters both took on the form of official announcements, the railway schedules (in conjunction with cheap fares) were emphasised, and those railway officials responsible for the publicity began to cast around for *other* attractions or arguments to increase travel by rail. Posters, which now seem crude, appeared, stressing the comparative comfort of rail travel, and the more progressive companies produced what are now considered rather quaint examples of lithographic art in the form of pictorial bills—these were the ancestors of the many famous railway pictorial posters which had been issued by the railway companies during the last few years.

There then followed what he called the "intermediate period," though as yet nothing remarkable had been achieved in the way of railway advertising. Advertising itself was at this time an undeveloped force and the necessity for its use was not generally felt in commerce. It was true that there were one or two notable exceptions, including the old North Eastern Railway, whose independent publicity organisation worked hard to make both the public and railway personnel sensitive to the value of publicity. Again, some famous posters which had since made history emerged, such as the "Jolly Fisherman" Skegness poster by Hassall, the Holyhead-Dublin poster by Norman Wilkinson, the beautiful coloured figure and sea-scape studies by Dudley Hardy, and some earlier railway posters by Frank Mason and Fred Taylor.

After the grouping the policy of advertising commenced in real earnest on more spacious and certainly more scientific lines. The budgets of the companies included within the new groups were combined; larger sums were devoted to publicity and consideration was given not only to the routine advertising of train services and excursion fares, but attention was also directed to other departments, to prestige advertising, to the creation of goodwill and to certain forms of "reminder" advertising, including the persistent use of slogans. Out-of-door publicity, which must always form an important part of railway propaganda on account of the large number of valuable sites which the railways possess on their property, commenced to make great strides. Artists were encouraged to specialise in railway poster work; a great field was opened to them, a regular livelihood was available to those who became proficient in this field of art. The vast territory covered by the amalgamated companies was scoured for appropriate subjects for posters. There was again room for specialisation in the class of subjects, ranging from architectural designs of cathedrals, abbeys and other ancient shrines to the broad figure treatment depicting the holiday spirit at the coastal resorts. The artists were also given an opportunity of exercising their originality in the creation of posters which would quickly convey an idea or direct a message of advertising value to the public. At the same time the development of lithography was given the closest attention, and the lithographic printer was able to specialise in railway poster printing. A spirit of co-operation between artist and printer was so made possible.

All this specialisation gave a new sense of perfection to the poster art of the railways; and the public, together with connoisseurs of art, quickly responded to this new phase of art publicity. The railway poster was no longer something to be tolerated or ignored but became a thing of real beauty and well worth acquiring. The poster, the speaker said, has a comparatively short life and some of the best examples have become "collectors' pieces," while many of the original designs form part of the permanent art collections in galleries throughout the country.

An enormous amount of routine printing for the purpose of advertisement was at the same time claiming attention, Mr. Dandridge continued. Here there were special problems of typography to solve, due to the far-reaching organisation. There were difficulties of control and consideration of geographical distribution. On the L.N.E.R. system 95 printing concerns produced some 40,000,000 copies of handbills, leaflets and pamphlets each working to a contract price and time delivery. This presented in itself a problem of checking and supervision. The quality and standard of printing at economically commercial rates before the grouping of the railways varied considerably, and in 1929 the L.N.E.R. set itself the task of bringing this vast volume of printing into line. The aim was to maintain a standard of work from London to Aberdeen while at the same time exercising economy in the actual cost of printing and, moreover, to introduce a design and style of type and settings which would be legible and modern and give a distinction to all L.N.E.R. material.

The first consideration was the actual type fount to be used. It was desirable to keep to one type face if possible; this face to be of such a character that it could be universally employed both in upper and lower case and capable of extension to all forms of railway printing. It was essential that it should ensure the maximum of legibility, that it should be modern and English in character and capable of use for many years to come. Thus it was decided to employ what is now so popularly known as L.N.E.R. Gill Sans—named after its originator Mr. Eric Gill, the famous sculptor and type designer. It was without ornament or serif and represented in any size or weight about the maximum clarity which could be obtained from the printed word.

Matrices for this type were made available at a small cost by the type founders who supplied these to the whole of the printers serving the L.N.E.R. Stipulation was now made in all contracts that this type must exclusively be used and standard settings were laid down for use throughout the L.N.E.R. system, a policy which was greatly simplified by the fact that a universal type face was employed. The conversion took some little time to carry through on account of existing contracts, but the result of the change was quickly seen. The personnel of the advertising department was supplied with a pocket edition of the standard alphabet, and enthusiastic co-operation in no small measure helped to perfect the scheme. In the case of letterpress posters the assistance of the wood block type manufacturers was called in, and with the help of Mr. Eric Gill accurately proportioned wood block

letters and figures were also supplied to all L.N.E.R. printers.

Since 1929, much had happened in connection with this type standard feature. The detailed matter of the company's timetables (down to the smallest 5 pt. type settings) has been converted to the new type. Its station nameboards and large direction signs had gradually been converted, consistent with economy. Its latest streamline locomotives proudly bore their titles in Gill Sans lettering while delivery vans exclusively carried this type. Lastly, neon and other illuminated signs were found to convey their message with greater clarity when so designed.

Since grouping the railway groups had set aside substantial proportions of their advertising budget for press advertising purposes, and the campaigns could broadly be classified under the following headings:—(*a*) Detailed excursion and train schedule announcements; (*b*) Facility announcements—passenger and freight; (*c*) Territorial advertising; (*d*) Prestige advertising. The last class of advertising (that of prestige) had sometimes taken the form of paid-for editorial "copy," and a few years ago the L.N.E.R. commissioned a well-known writer to prepare a series of articles on the working of the railway from the point of view of the "man in the street." These articles occupied a column in all the leading morning dailies, including *The Times*, once each week and covered a variety of subjects such as the handling of the night parcels traffic, the working of an important railway junction, a trip on the footplate of the night mail, &c. The public interest in these articles was so great that they were finally re-issued in book form and enjoyed a large and independent circulation as such.

Referring to the editorial side of railway publicity, under which category might be classed all references in the editorial pages of newspapers and magazines to railway matters, Mr. Dandridge said the L.N.E.R. had found it advantageous to conduct through an independent press section attached to the Chief General Manager its contacts with the editorial side of the press. This policy enabled the advertising manager, who was responsible for the buying of space in the newspapers, to observe a strict neutrality, basing his judgment entirely upon the advertising value of the space so purchased, irrespective of editorial advantages which might be offered as an inducement. On the other hand, the railway press agent in charge of the editorial publicity maintained close contact with the editors, leader writers, topical contributors, reporters, free lance journalists, etc., and was in fact the fount and authentic source of railway information. The railway press agent was charged with the responsibility of collecting and collating all forms of railway information which might be useful to the editorial staffs and was frequently called upon to straighten out inaccuracies and to counteract pernicious and harmful propaganda.

Other matters with which the speaker dealt were railway literature in the form of handbills, booklets, holiday handbooks, photographs, and the more elaborate and expensive publications which were frequently placed in the hands of world-famous publishing firms; film publicity, lantern lectures and slides; radio propaganda; and displays of advertising material.

Speaking of further developments, Mr. Dandridge stated that the greatest scope lay in the simplification of the facilities themselves, and the last two or three years had proved that the elimination of restrictions in the cheap fare arrangements, and easily remembered concessions such as the monthly return tickets at about a penny a mile, and the weekly holiday season tickets at fares round about 10s., quickly responded to advertising, and such became the main bargains of the railway season. Simplification of train timetables by the scheduling of trains as far as possible at regular and easily remembered times would strengthen the advertising. The greater use of railway literature for educational purposes was a tendency which could already be observed, and further co-operation with scholastic bodies might be anticipated in the future. The more elaborate railway literature from the pens of well-known writers, illustrated by famous artists, would find, in the time to come, a place both in the libraries and as works of reference in private houses. There was already a fair library of railway travel literature, and each year added to its strength. The development of the travel film, both for entertainment and educational purposes, would undoubtedly go ahead, and the recent improvement in colour films would give impetus to this. The film now had its recognised place in the school curriculum and there was scope for co-operation with the railways in this direction.

More attention would be given in the future to the design of railway buildings, especially railway stations, whereby advertising material such as posters and train schedules might efficiently and appropriately be displayed in positions convenient for reference. Architectural features should blend and not clash with the essential advertising they must carry.

Forthcoming Events

Feb. 25 (*Fri.*).—Institute of Transport (Manchester-Liverpool), at Exchange Station Hotel, Liverpool, 6.30 p.m. "Air Transport," by Mr. R. Carter.

Railway Students' Association (Edinburgh), at Goold Hall, St. Andrew Square, 7.30 p.m. "The Darlington Operating District," by Mr. T. Hare.

Feb. 26 (*Sat.*).—London Transport Military Band, at Kingsway Hall, Kingsway, W.C.2. Concert.

Mar. 1 (*Tues.*).—Federation of Railway Lecture and Debating Societies (N.E. Area), at Co-Operative Hall, Railway Street, York, 7 p.m. Debate: "That Railway Revenue has Benefited by the Introduction of Tariffs and Quotas." Affirmative: Messrs. B. Jessop and H. Lattimer. Negative: Messrs. T. Brown and J. Hancock.

Great Eastern Mechanics Institution, Stratford, 8 p.m. "The Efficiency of the Locomotive Boiler," by Mr. P. Lewis-Dale.

Institute of Transport (Bristol). "The Operation and Control of a Road Haulage Undertaking," by Mr. J. Nicholl.

Institute of Transport (Leeds), at Hotel Metropole, 6.30 p.m. "Some Current Problems affecting the Road Motor Transport Industry," by Mr. F. Bristow.

Institute of Transport (Metropolitan Graduate), at Inst. of Electrical Engineers, Savoy Place, W.C.2., 6 p.m. "Peak Hour Traffic," by Mr. J. Payne. "Booking the Passenger," by Mr. H. Viney.

Mar. 2 (*Wed.*).—Railway Students' Association (Edinburgh), at North British Station Hotel, 7 p.m. Annual Dinner.

Mar. 3 (*Thurs.*).—G.W.R. (London) Lecture and Debating Society, in General Meeting Room, Paddington Station, 5.45 p.m. Debate with Southern Railway (London) Lecture and Debating Society.

Mar. 4 (*Fri.*).—Institute of Transport (London), at Connaught Rooms, Great Queen Street, W.C.2, 7 for 7.30 p.m. Annual Dinner.

Institute of Transport (Nottingham Graduate), at Guildhall, 7 p.m. "The Travel Agent," by Mr. G. Sweet.

Mar. 5 (*Sat.*).—Permanent Way Institution (Manchester-Liverpool), at Technical College, Liverpool, 3 p.m. "Permanent Way for High Speed," by Mr. W. A. Willox.

Mar. 7 (*Mon.*).—Institute of Transport (London), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. "The Defence of Transport against Air Attack," by Wing Commander E. Hodsoll, C.B.

Permanent Way Institution (London), at Underground Railways Dining Club, Pelham Street, S.W.7, 7 p.m. "Permanent Way for High Speed," by Mr. W. A. Willox.

Stephenson Locomotive Society (Scottish), at Royal Technical College, George Street, Glasgow, 7.30 p.m. "Thirty Years of English Locomotive Development," by Mr. R. Weight.

Mar. 8 (*Tues.*).—Institute of Transport (Birmingham), at Queen's Hotel, 6 p.m. "The Development of Transport," by Mr. W. Creighton.

Institution of Civil Engineers, Great George Street, London, S.W.1, 6 p.m. "Engineering Problems Associated with Clay, with Special Reference to Clay Ships," by Mr. T. Seaton.

Permanent Way Institution (Sheffield). Annual Dinner.

Permanent Way Institution (York), at Railway Inst., Queen Street, 6.30 p.m. "Curves, Adjusting and Maintaining Alignment and Superelevation," by Mr. W. Dunstan.

Mar. 8–10.—Institute of Metals, at Inst. of Mechanical Engineers, Storey's Gate, London, S.W.1, 7 p.m. Annual General Meeting.

Mar. 9 (*Wed.*).—Institute of Metals, at Grosvenor House, Park Lane, London, W.1, 7 p.m. Annual Dinner.

Institute of Transport (Manchester-Liverpool Graduate), at Exchange Station Hotel, Liverpool, 6.30 p.m. "Preparation for the Institute Examinations," by Mr. F. Watts.

Mar. 10 (*Thurs.*).—Diesel Engine Users' Association, at Caxton Hall, Caxton Street, London, S.W.1, 5 p.m. "Bearing Metals."

Railway Club, at Royal Scottish Corporation Hall, Fetter Lane, London, E.C.4, 7.30 p.m. "High Speed Extra-Fare Express Trains. Do they meet the Needs of the Public?" by Mr. H. Vallance.

XUM

Colonel Manton on the Training of Railway Staff

The fourth ordinary meeting of the Railway Students' Association was held at the London School of Economics and Political Science on February 17, when Colonel L. Manton, R.E., Principal of the L.M.S.R. School of Transport, read a paper on the training of railway staff. Colonel H. H. Mauldin (Vice-President of the Association), Superintendent (Eastern Section), Southern Area, L.N.E.R., presided and was supported in the chair by Mr. C. E. R. Sherrington, Secretary, Railway Research Service; and Mr. J. E. Sharpe, Assistant to the Superintendent (Eastern Section), Southern Area, L.N.E.R.

Colonel Manton began by saying that when the association asked him about a year ago to read a paper on railway staff training, it was obviously the L.M.S.R. School of Transport of which particularly information was wanted. Unfortunately, progress in preparing the course of instruction at the school had not been so rapid as it was then hoped, and the amount of concrete information that could be given was small. Consequently his paper consisted primarily of a confession of faith in the training of railwaymen, secondly of a brief account of some of the present training arrangements at home and abroad, and only thirdly did it touch on the L.M.S.R. School of Transport.

Thirty years of Army life, over twenty of them among railwaymen, and the last five spent actually training them, had, he said, given him a firm faith in the value of training. A railway was a complicated machine which manufactured and sold transport, and the quality of that service rested ultimately on the output of the human beings in charge. Improvement of the quality of this machine was his definition of the object of railway training. Its aim could be defined by paraphrasing slightly the Army's "Training Regulations," viz.:—"The aim of training must be to produce efficient leaders, a disciplined staff skilled in the use of their equipment and an administrative service familiar with their responsibilities." Colonel Manton suggested that every man should be responsible for teaching those of whom he was in charge. This should be done not by a process of correcting mistakes, but by a process of actual positive tuition.

The L.M.S.R. Company's arrangements for the training of staff were then outlined, the principal points referred to being the recruiting of juniors; the provision of educational facilities to all grades of staff at any age, the division of this educational training under various headings and the facilities available under each of them (classes and lectures conducted exclusively by the company, mutual improvement classes, classes under local education authorities, and university courses); railwaymen's institutes; and the traffic apprentice scheme.

Turning to practice abroad, Colonel Manton pointed out that conditions on the railways at home were different from those in France and Germany, where the problem had been tackled differently. Briefly dealing with the organisation of the French State Railways as it was early in 1937 and the training arrangements on that system, he passed on to a description of the school set up in Rouen in 1928, which was comparable to the L.M.S.R. School of Transport. The Rouen establishment, he said, was occupied in turn by traffic schools, permanent way schools, loco schools and workshop schools. After one or two experiments the course settled down to be one per annum beginning on January 1. It consisted of lectures and a process known as *repetitions*, of practical work, papers, oral examinations, and visits to outside stations. The practical work was carried on by taking a group of students to one or other of the stations, marshalling yards, &c., of Rouen and making each man double for eight hours with an employee and do his work with him. A stretch of line in the neighbourhood was also used for practice, and a special intense traffic run by motor trollies. This school was producing excellent practical results.

After giving an insight into the intricacies of the German State Railway administration and system of staff training, Colonel Manton reviewed some of the staff trainnig arrangements of Indian railways. He referred to the Indianisation of the staff, begun about 1910, and the area schools which were set up to produce Indian subordinates; the Dehra Dun Staff College, which owed its origin to a recommendation made by the Ackworth Committee in 1921 and was unfortunately economised in 1932; and the Chandausi Central School of Transportation.

Coming to his last subject, the L.M.S.R. School of Transport, Colonel Manton stated that the purpose of this school (of which he is the Principal) is by lectures, demonstrations and teaching to make the best of existing practices, and new ideas, available to and understood by those sections of the staff to whose work they applied. Taken in the large, he said, the literature available on the subject of ordinary everyday operating of the railway is not to be compared in extent or value with the literature available to the permanent way engineer, electrical engineer and others. It could not be supposed that there was no accumulated wisdom among the non-technical traffic staff, and one of the purposes of the L.M.S.R. School was to try to capture some of it, and to record it for the benefit of posterity. Hitherto, he went on to say, officials who had spent their lives rendering the most valuable services to the company, acquiring all the time experience and knowledge which was available, had retired and, unfortunately, taken their wisdom with them. Having found out what was the really best way of doing each of the actions whose sum went to make up operating or control or whatever it might be, and having thus produced a doctrine capable of application to the infinitely varied circumstances of everyday work, the school's duty was not only to instil that knowledge into its students, but also to make it available to others. It was essential, therefore, that the school should turn out men who were capable of passing on the knowledge required—in other words, the leaders to whom he referred earlier in his paper. The school would start with one advantage in this respect, as each student would be a man specially selected for his suitability.

The initial arrangements contemplated a course in passenger station operating, in goods station operating and in salesmanship. Training would be given by means of lectures, based on draft textbooks under preparation, which would be in the hands of the students. These lectures would be given by members of the company's staff; and they would be followed by demonstrations. For instance, he said, if the subject of the lecture was the modernisation of a goods shed, the students would visit such a modernised shed and see it working. The demonstrations would be followed by an example of execution. The students, divided into suitably small parties or syndicates, would be given a practical problem on modernisation, the problem having of course, been carefully worked out beforehand by the resident instructors, of whom they were starting with three. The syndicate solutions would be handed in to, and discussed with, the instructor. He would criticise and the student would defend.

It should be remembered, Colonel Manton said, that in both operating and commercial matters there were so many variants that it was impossible to say whether the solution to a problem was right or wrong, be the problem never so concrete and practical. The point of setting it was to make the student think, and to make him apply the principles or methods described by the original lecturer; the point of discussing it was to make him give valid reasons for his proposals. After this syndicate discussion, the "school solution" of the problem would be given to the whole class, for the students to criticise and attack, and for the instructor to defend. This was a form of repetition. Experience had shown that the method of explanation (lecture), demonstration, execution and repetition, taken in that order, left an impression on the student which was generally indelible and that it effectively prevented the instruction from becoming academic.

Continuing, Colonel Manton said that by itself there was a risk of this arrangement leading to a departmental outlook. Concentrated on goods station problems the student would tend to magnify their importance and to forget that the passenger station existed. To prevent this, there was no better way than to let him hear passenger station shop, and to give him the opportunity of joining in it, and the best opportunity occurred, of course, when the passenger man plays and eats with the goods man. So it was decided that the school should be residential, and there was now under construction at Derby a really fine building which would house 50 students at a time. It would contain, besides the usual classrooms and domestic arrangements, a lounge, a games room, a library, a lecture hall fitted up as a cinema, and a hall of transport, around which a model railway would run; in the body of the hall, it was the intention gradually to accumulate sectional models of instructional value to the student.

In conclusion the lecturer said that he hoped his paper had shown that the subject of the training of railway personnel was complex, worthy of study and experiment, and a matter which exerted a powerful influence on the well being and efficiency of the railway system.

QUESTIONS IN PARLIAMENT

Central London Railway

Mr. H. Parker (Essex, Romford—Lab.) on February 21 asked the Minister of Transport when the extension of the Central London Line would be completed as far as Stratford and right through to Newbury Park.

Dr. Leslie Burgin (Minister of Transport): The London Passenger Transport Board hopes that the extension of the Central London Line from Liverpool Street to Stratford will be completed by the summer of 1940 and the extension to Newbury Park by about the end of that year.

Aldgate East Station

Mr. H. Parker (Essex, Romford—Lab.) on February 21 asked the Minister of Transport when the reconstruction of Aldgate East station would be completed, and the full services from the north side of the Inner Circle to Upminster be in operation.

Dr. Leslie Burgin: My right hon. friend is informed by the London Passenger Transport Board that the works at present being carried out at Aldgate East station are difficult and intricate and that it is unlikely that they will be completed before the summer of 1939. Shortly after that date there will be an improvement of the service on the Barking and Upminster line.

Argentine Railways

Mr. R. De La Bere (Evesham—C.) on February 21 asked the Chancellor of the Exchequer whether, in view of the inability of the directors of the Anglo-Argentine railways to obtain redress from the Argentine Government, notwithstanding their prolonged efforts, he would request the Council of Foreign Bondholders to take up with the Argentine Government the ill-treatment of the £270,000,000 of British savings invested in the Argentine railways, and in respect of which His Majesty's Treasury was concerned in relation to income and surtax and death duties.

Colonel D. J. Colville (Financial Secretary to the Treasury): My right hon. friend thinks that the preferable course is that difficulties between the Argentine authorities and British railway companies operating in the Argentine should continue to be discussed between the British companies and the authorities concerned. His Majesty's Government is always ready to consider any request for support made by such companies. In so far as the question implies that the Argentine Government's attitude to such companies is one of hostility or that the directors of the British companies have failed to represent adequately the interests of the British capital invested therein, my right hon. friend does not agree that such implications correctly represent the facts.

Sir Nicholas Grattan-Doyle (Newcastle-upon-Tyne North—C.) on February 21 asked the Secretary of State for Foreign Affairs, whether he was aware that the permission of the Argentine Government to the Anglo-Argentine railways on December 20 to increase their rates had been stated to produce £312,000 for the coming year upon a capital of £270 millions; and, in view of the fact that this increase was insufficient, would he obtain from the Argentine Government an official statement as to the estimated extent the proposed increased tariffs would benefit the railway revenues.

Sir John Simon (Chancellor of the Exchequer) who replied for the Foreign Office, said: I assume that my hon. friend bases his question on a report which appeared in the press last December that the Argentine Government was about to issue a decree permitting the increase in railway tariffs which he describes. My information does not indicate that any such decree has in fact been issued. His Majesty's Ambassador at Buenos Aires has been requested to throw any light he can on the origin of the above-mentioned report.

Egyptian Strategic Railway

Mr. P. W. Donner (Basingstoke—C.) on February 22 asked the Secretary of State for War, whether work had yet begun upon the construction of the new strategic railway from Zagazig to Kafr ez-Zayat and Mit-Ghanu, on the Nile; and, if not, would he give an assurance that the British military authorities would ensure that no further postponement took place for the purpose of considering alternative routes or for any other reason.

Mr. Leslie Hore-Belisha (Secretary of State for War): The answer to the first part of the question is in the negative. As regards the second part, the railway named is only part of a comprehensive programme spread over several years. The Egyptian Government cannot be expected to carry out all parts at once and the relative priority to be given to individual items is a matter for decision from time to time.

Railway Coal Consumption

Captain Crookshank (Secretary for Mines) in a written reply to Mr. T. Smith (Normanton—Lab.), who asked the total quantity of coal used, and the average price per ton paid, by railway undertakings during each of the last six years, gave the following information:—

Railway undertakings steam train workings

Year	Average cost of fuel per ton
	s. d.
1931	17 9
1932	17 8
1933	17 4
1934	17 0
1935	17 0
1936	17 1

The Castlecary Accident

Mr. T. Cassells (Dumbartonshire—Lab.) on February 23 asked the Minister of Transport, if he would state the number of persons injured in the Castlecary railway accident who were holders of cheap daily travel tickets.

Dr. Leslie Burgin: One of the passengers killed and thirteen of those injured were holders of cheap day tickets.

Parliamentary Notes

Southern Railway Bill

The Southern Railway Bill was read a second time on February 17.

L.N.E.R. Bill

For some time, Labour M.P.s have been blocking the second reading of the L.N.E.R. General Powers Bill, owing to the objections of the Railway Clerks' Association to certain provisions relating to superannuation. As a result of a meeting last Monday morning between representatives of the L.N.E.R. and R.C.A. Members of Parliament, negotiations have been begun which offer promise of a solution of the difficulty. As a result, the block has been removed, so far as members speaking for the R.C.A. are concerned.

XUM

London West Division, S.R., Annual Dinner

The fourteenth annual dinner of the London West Division, Southern Railway, was held at the Criterion Restaurant on Wednesday, February 16, with Mr. J. E. Sharpe, Divisional Superintendent, in the chair. The dinner was attended by over 200 members of the Superintendent's Office Staff, stationmasters and supervisory staff and their guests. Among the latter were :—

Mr. J. B. Elliot, Assistant General Manager ; Mr. E. J. Missenden, Traffic Manager ; Mr. E. F. Lovesey, Development Officer ; Mr. W. J. England, Assistant Superintendent of Operation ; Mr. E. S. Moore, Western Divisional Locomotive Running Superintendent ; and Mr. P. Nunn, London East Divisional Superintendent.

Shortly after the dinner had started, Mr. Gilbert S. Szlumper, the General Manager, looked in unexpectedly, and in a short speech which was received with loud applause, praised the London West Division for the excellent work done in that year of abnormal traffic, for the high punctuality standard attained, and for their success in the opening month of "Southern Sales."

Mr. A. Creswell, Stationmaster at Staines, in proposing the toast of "The Directors and Officers of the Company," referred to the loss sustained by the company in the retirement of Sir Herbert Walker, but spoke in eulogistic terms of his successor, Mr. Gilbert S. Szlumper ; the unexpected visit of their new General Manager in the course of the evening had been a very welcome surprise. Mr. Creswell went on to say that in Mr. L. J. Missenden they had a Traffic Manager with a bump of optimism well marked, for in formulating his prospectus for the Southern Sales League he had taken the 1937 figures as a basis, added 1 to 2 per cent., and expected the staff to go one better. He was confident, however, that all stationmasters would do their utmost, with Mr. Missenden's optimism as their inspiration and guiding force. Mr. Creswell made his peroration in verse, and his entire speech was enthusiastically received.

Mr. E. J. Missenden, in his reply, said he was grateful to all for the assistance they had given him in his work, and by virtue of having been a divisional superintendent for 11 years claimed to know something of the daily task of railwaymen, and in particular of divisional officers. The year 1937, with its exceptionally heavy traffic and inauguration of electrified services to Portsmouth, had imposed a great strain on the London West Division, and he was pleased to congratulate not only Mr. Sharpe on the smoothness and efficiency with which he had done his job, but also his assistants, the stationmasters and the staff in general for putting up a really good show. Paying a tribute to Sir Herbert Walker, Mr. Missenden referred to his successor, Mr. Szlumper, as a man of charming personality and great qualities of leadership, who could, he felt sure, rely upon the co-operation of everybody in his task of maintaining and enhancing the company's efficiency. They were proud to welcome Mr. J. B. Elliot, who had been selected from the Traffic Department to fill the post of Assistant General Manager, and wished him every success.

Mr. M. L. Bazley, Stationmaster at Richmond, proposing the toast of "The Chairman," said he had served under eight divisional superintendents, and spoke with high appreciation of Mr. Sharpe, whom he respected for his thoroughness and fairness.

Mr. Sharpe, responding, said that the Divisional office had done splendidly in coping with the pressure of work in 1937 and fully merited the tribute paid by their General Manager earlier in the evening. Mr. Szlumper had alluded to the West Division's occupying the top place in the Southern Sales League, but the Traffic Manager had said nothing about it : in this silence Mr. Missenden was, he considered, amply justified, for the scheme had been in force for only one month, and he himself was the first to realise that the efforts of all were essential to perpetuate this initial success.

L.N.E.R. (King's Cross) Literary Society Smoking Concert

On Friday last, February 18, the King's Cross Literary Society held its 46th annual smoking concert. As is customary, this function took place at the Queen's Hall, London, and Mr. William Whitelaw, Chairman of the company, presided. The variety programme of entertainment comprised such items as the Kneller Hall Band, Olive Groves (soprano), James Wilkinson (bass-baritone), Arthur Prince (ventriloquist), and various well-known entertainers. Among those present were :

Representing the L.N.E.R. : Messrs. William Whitelaw, P. J. Dowsett, C. J. Selway, L. C. Glenister, J. Procter Smith, W. A. Fraser, F. E. Harrison, J. C. L. Train, T. H. Seaton, B. P. Fletcher, W. H. Hanscombe, G. Sutherland, J. Lees, F. Warriner, J. E. Ryan, G. Marshall, W. Gracie, L. H. K. Neil, R. R. Pettit, H. W. H. Richards, S. L. Murgatroyd.

Also present were : Messrs. G. Morton, Chief Accountant, L.M.S.R. ; C. H. Sutherland, Asst. Accountant, L.M.S.R. ; T. W. Royle, L.M.S.R. ; Sir Ralph Cope, Chief Accountant, G.W.R. ; Messrs. C. R. Dashwood, Asst. General Manager, G.W.R. ; A. E. Moore, Audit Accountant, Southern Railway ; E. J. Missenden, H. E. O. Wheeler, C. Cooper, Southern Railway ; J. P. Thomas and A. L. Barber, L.P.T.B. ; C. E. R. Sherrington, Secretary, Railway Research Service ; E. E. Painter, Railway Clearing House ; A. Feirn and J. Caldwell, Ministry of Transport ; A. Winter Gray, Secretary, Institute of Transport ; W. M. Wallace, Chief Inspector of Taxes, Inland Revenue ; H. Garcia and W. F. Atkins, late Chief Inspectors of Taxes, Inland Revenue ; A. Mertz, Belgian State Railways ; V. P. Ceresole, Swiss Federal Railways ; H. H. Gardiner, Thos. Cook & Son Ltd. ; Shirley H. James, Pickford Limited ; G. H. Griffith, Pullman Car Company ; H. J. Jewell, B. & N. Line, Royal Mail ; W. A. Willox and Charles E. Lee, THE RAILWAY GAZETTE ; H. A. Watson ; W. H. Morgan, County Engineer of Middlesex ; F. V. H. Seale, Messrs. Price, Waterhouse & Co. ; E. Boynton, Sir Wm. Arrol & Co. Ltd. ; A. M. McTaggart, Balfour Beatty & Co. Ltd. ; T. P. Bennett, T. P. Bennett & Son.

The society was instituted in 1854 in quite a small way as the Great Northern Railway Reading Society, but with the increase in the number of members, larger rooms were provided by the railway company. Eventually, upon grouping, the name of this society was changed to the present one. The society became affiliated to the Railways Athletic Association, and in recent years has taken an increasing interest in indoor sports. Times have, however, changed and since the last annual smoking concert, the society has experienced a great upheaval and is now only a shadow of its former self. Owing to the requirements of the L.N.E.R., the rooms occupied by the society for so many years have had to be given up, and the library, together with much of the equipment, has been disposed of. Two billiards tables have been loaned to another organisation and the remaining two tables have been placed in store pending the loan of them elsewhere. During the early part of 1937, the society launched a bridge section, and this, together with the old-established chess section, has enabled the society to maintain its existence. These two sections, both in a flourishing condition, carry on their activities for the present in borrowed territory.

It is in connection with the smoking concert, however, that the society is known mainly to the outside world. With the exception of the war period, a smoking concert under the auspices of the society has been held for many years now, and in fact originated at a meeting of members held as long ago as February, 1887, when Queen Victoria's Jubilee year provided the incentive for a special celebration. At the present time, the friends and traders of the L.N.E.R. who attend the concert are provided with an excellent opportunity for social intercourse in congenial surroundings.

Mr. William Whitelaw made a brief speech of welcome immediately before the interval, in which he greeted the members and friends of the company present, and explained briefly that in view of the circumstances which we have outlined above, there was no necessity on that occasion for him to present cups and shields won in various competitions. Before the conclusion of the proceedings a hearty vote of thanks was accorded the Chairman on the motion of Mr. F. Warriner, the Chairman of the concert committee.

WROUGHT IRON CHAIN SLINGS.—A British Standard Specification (B.S.S. No. 781—1938) for wrought iron chain slings has just been published. Copies can be obtained from the British Standards Institution, 28, Victoria Street, S.W.1, price 3s. 6d. each.

RAILWAY AND OTHER REPORTS

London & North Eastern Railway Company.—The Assistant Secretary writes, February 18: "I have to inform you that, after having charged £52,591 against the general reserve fund in respect of the sinking fund on the 4½ per cent. debenture stock, and having set aside £150,000 to the fund for contingencies, the directors recommend that, subject to final audit, dividends be paid as under: A final dividend of 3 per cent. on the 4 per cent. first preference stock, making, with the interim dividend of 1 per cent. already paid, 4 per cent. for the year; a final dividend of 3¾ per cent. on the 5 per cent. redeemable preference stock (1955), making, with the interim dividend of 1¼ per cent. already paid, 5 per cent. for the year; and a dividend at the rate of 1¾ per cent. for the whole year on the 4 per cent. second preference stock; in each case less income tax, leaving a balance of £83,926 to be carried forward. Warrants for the dividends on the above-mentioned preference stocks will be posted on March 9."

Provincial Railways of Buenos Ayres.—Gross receipts for the year ended June 30, 1937, were $15,689,933, against $13,870,150 in the previous period, the increase being due principally to maize traffic, while working expenses were only slightly higher, being $11,957,163 against $11,708,090. Passengers numbered 2,436,687 and goods tonnage 1,849,133. After deducting the maximum annual reserve for renewals, and providing for insurance and depreciation, and adding interest and exchange gains, a net profit is available of fr. 9,271,909, and after providing for the full interest and amortisation of the 4½ per cent. debentures, there remains an amount of fr. 4,498,358, out of which a first dividend is proposed on the shares of 5 per cent., plus a supplementary dividend of fr. 15 per share, leaving a remainder carried forward of fr. 298,523.

Beira Railway Company.—Accounts for the year ended September show that gross revenue of the Beira-Umtali line amounted to £972,273, against £801,352 in 1935-36, while working expenditure (including depreciation) was £45,108 higher at £419,279, leaving net earnings £552,994, or £125,813 more than in the previous period. Net profit, after providing £145,000 (against £85,000) for taxation, is £278,165 (£160,800 for 1935-36), from which has to be deducted £50,000 expenses of issue of 5 per cent. debenture stock, £9,189; cash capital payment on conversion of old 6½ per cent. stock, and £7,255 repayment premium of prior lien rent charge. This was in connection with the debenture conversion scheme carried through at the beginning of 1937. £10,500 is reserved for the proposed pension fund and a dividend is recommended of 2s. a share, while £20,000 (against nil) is carried to dividend equalisation account, with £80,000 transferred to reserve, and £30,203 carried forward. For the previous year the dividend was 1s. 8d. a share and £33,982 carried forward.

São Paulo-Parana Railway.—According to the interim report issued by Parana Plantations Limited, the gross receipts of the railway in 1937, received by cable, rose from 4,227 contos of reis to 6,111 contos of reis.

Bristol Tramways & Carriage Co. Ltd.—This company, which is controlled by the Western National Omnibus Co. Ltd., which in turn is jointly controlled by the Great Western Railway and the National Omnibus & Transport Co. Ltd., announces a final dividend of 5 per cent., less tax, making 8 per cent. for the year, the same as in the previous year. In October last the shareholders received a special cash bonus of 25 per cent., free of tax.

Birmingham Canal Navigations.—The report for 1937 shows total receipts of £104,560, a decrease of £8,349, compared with the previous year. Receipts continue to be affected adversely by the closing, for long periods, of local electricity generating stations. Net rents from property and easements produced £29,966 (an increase of £196). A sum of £33,732 is available for dividends (against £39,819 in 1936), and the additional sum of £63,581 required to make up a dividend of 4 per cent. will be provided by the London Midland & Scottish Railway under the terms of the Act.

Highland Transport Co. Ltd.—The annual report of this company, in which the L.M.S.R. holds a 50 per cent. interest, shows for the year ended September 30, 1937, a gross trading profit of £10,114, compared with £8,855 for 1936. After allowing for depreciation, directors' fees, and income tax, a balance remains at credit of £2,838. The directors recommend a dividend of 1s. a share less income tax, absorbing £1,313. They also recommend that £500 be written off goodwill and £500 added to general reserve, leaving £526 to be carried forward. There is an increase of over £1,250 in the profit on trading account.

Vickers Limited.—The directors give notice that the following final dividends for the half-year ended December 31, 1937, will be paid to the holders of the preferred 5 per cent. stock, the 5 per cent. preference stock, and the cumulative preference stock of the company who are registered in the books of the company on Saturday, February 26, 1938: 2½ per cent., less income tax, on the preferred 5 per cent. stock; 2½ per cent., less income tax, on the 5 per cent. preference stock; and 2½ per cent., free of income tax on the cumulative preference stock. Payment will be made on Friday, March 25. The registers of members relating to these issues will be closed from Monday, February 28, to Saturday, March 5, 1938, inclusive.

Moss Gear Co. Ltd.—The half-yearly dividend of 3 per cent. on the 6 per cent. cumulative preference shares is payable on March 1.

Charles Roberts & Co. Ltd.—A dividend on the preference shares at the rate of 6½ per cent. per annum, tax free up to 4s. in the £, for the half-year ended December 31, 1937, will be paid on March 1.

Birmingham Railway Carriage & Wagon Co. Ltd.—Trading for the year 1937 resulted in a profit of £56,567 (against £51,782 for 1936). A dividend of 5 per cent. is again to be paid on the ordinary capital, leaving £27,106 to be carried forward (against £17,382).

Davies & Metcalfe Limited.—This company reports a profit for 1937 of £26,532 (against £35,310 for 1936). Out of this the directors have provided £4,430 for taxes and transferred £2,500 to depreciation reserve. They propose to pay a final dividend of 10 per cent. (making 15 per cent. for the year); to write £500 off patents; to place £3,000 to general reserve; and to carry £1,751 forward (against £649 brought in).

Crosthwaite Furnaces.—The report for 1927 of Crosthwaite Furnaces & Scriven Machine Tools Limited shows a profit of £4,895. Adding £3,479, the balance at credit of profit and loss account brought forward from last year makes a balance available for appropriation of £8,374. The directors recommend a dividend of 10 per cent. plus a bonus of 5 per cent. (both subject to income tax), and the transfer of £1,000 to general reserve. This will leave £3,702 to be carried forward.

English Electric Co. Ltd.—This company proposes to pay an ordinary dividend of 10 per cent., less tax, for the year 1937. The last payment on the ordinary shares was the 5 per cent. in respect of the year 1924. The accounts for 1937 show a net profit of £436,185. This is an advance of £200,880 over the corresponding balance for 1936 (£235,305), when three years' dividend on the preference stock was distributed, thus clearing off all arrears. The sum required for that purpose was £221,490.

Forthcoming Meetings

March 4 (*Fri.*).—**London & North Eastern Railway Company** (Annual General), Wharncliffe Rooms, Hotel Great Central, Marylebone Station, N.W.1, at 2 p.m.

March 8 (*Tues.*)—**The Great Indian Peninsula Railway Annuities** (Annual General), Winchester House, Old Broad Street, London, E.C., at 12.15 p.m.

March 10 (*Thurs.*).—**London Midland & Scottish Railway Company** (Annual General), Friends' Meeting House, Euston Road, N.W.1, at 11.30 a.m.

XUM

NOTES AND NEWS

Commercial Travellers' Easter Tickets.—The National Union of Commercial Travellers has been informed by the Railway Clearing House that commercial travellers' week-end tickets will be issued on Wednesday and Thursday, April 13 and 14, as well as Good Friday, Saturday, and Easter Sunday. The return halves will be available on any day up to and including Monday, May 2, a total period of 19 days.

L.N.E.R. Touring Camping Coach on Show.—The L.N.E.R. will place on exhibition at Marylebone station, on February 28, March 1, and March 2, the touring camping coach used for seven-day tours of the Yorkshire dales and moors, starting and finishing at York. The vehicle accommodates six persons in separate sleeping compartments, and a seventh person in a spare compartment fitted with a collapsible bed. There is also a comfortable living room, a kitchen with full cooking facilities, and an adequate supply of crockery, cutlery, and linen. A representative of the L.N.E.R. will be at Marylebone to answer enquiries about the coach.

Road Accidents.—The Ministry of Transport returns for December of persons killed or injured in road accidents is as below. The figures in brackets are those for the corresponding period of last year :—

	Killed		Injured	
England—				
Pedestrians ...	262	(238)	5,292	(4,732)
Others	202	(198)	8,058	(7,735)
Wales—				
Pedestrians ...	8	(14)	208	(174)
Others	7	(11)	281	(315)
Scotland—				
Pedestrians ...	22	(42)	659	(550)
Others	20	(18)	672	(574)
	521	(521)	15,170	(14,080)

The total fatalities for the preceding month were 594, compared with 694 in the corresponding period of 1936.

Railway Letters : Increase in Weight.—The Postmaster-General has announced that from March 1, the limit of weight of railway letters in Great Britain and Northern Ireland, including Jersey, Guernsey, and Douglas (Isle of Man), will be increased to 1 lb. Charges throughout this area will be as follow :—

Weight	Postage (Letter rate)	Railway Fee	Total
Not exceeding 2 oz. ...	1½d.	3d.	4½d.
Over 2 oz. and not exceeding 4 oz. ...	2d.	6d.	8d.
Over 4 oz. and not exceeding 1 lb. (max.)	varying from 2½d. to 5d.	9d.	varying from 11½d. to 1s. 2d.

Size limits will be those applicable to ordinary inland letter post, namely, length, 2 ft. ; width, 18 in. ; depth, 18 in. ; or if made up in the form of a roll, 3 ft. 3 in. for length, and twice the diameter combined, and 2 ft. 8 in. for the greatest dimension. In the case of letters not exceeding 2 oz. to or from stations in Northern Ireland, the above scale represents a reduction of 1d. (*i.e.*, the railway fee will be reduced from 4d. to 3d.)

South Shields Electrification.—The electric service of the South Shields branch of the L.N.E.R. is to be inaugurated on March 14, when the company has invited the Lord Mayor of Newcastle to start the first train from Newcastle, and the Mayor of South Shields that from his town. On March 14 only two electric trains will be available, and therefore part of the service will continue to be run by steam trains for the time being. An all-electric accelerated service is scheduled to begin on May 2, reducing the journey time from 34 min. to 27 min.

L.N.E.R. " Coronation " Streamlined Express.—Beginning on Monday, March 7, the L.N.E.R. streamlined Coronation express, will stop at Newcastle every evening (Mondays to Fridays inclusive) on the down journey from King's Cross to Edinburgh. It will arrive at Newcastle at 7.57 p.m., and leave for the Scottish capital at 8.0 p.m. The arrival time in Edinburgh will remain 10 o'clock, as at present. The Newcastle stop will provide not only a new fast service from Newcastle to Scotland, but a second streamlined express service between London and Newcastle. The departure of the Silver Jubilee from King's Cross for Newcastle will remain unaltered at 5.30 p.m.

What a Saving of 1 per cent. May Mean.—In 1880, the proportion of expenditure to receipts on the old L.N.W.R. was 50 per cent. ; in 1932, this proportion on the L.M.S.R., was 85 per cent. Thus, in 1880, a saving of 1 per cent. in the operating expenses meant an increase of 1 per cent. in net revenue, whereas in 1932 a saving of 1 per cent. in operating expenses represented an increase of 5¾ per cent. in net revenue. In other words, the need for finding the means of saving that 1 per cent. in expenditure had increased nearly six times. These were some striking figures quoted in a paper on " Experiment and Research," by Mr. O. H. Corble, Assistant to the Chief General Manager, L.N.E.R., on February 22, to the Newcastle & Sunderland L.N.E.R. Debating Society, Newcastle.

Locomotive Naming Ceremony at Paddington.—On Friday morning last, February 18, at Paddington station, London, General Sir Walter Braithwaite, G.C.B., Colonel of the Somerset Light Infantry, performed the ceremony which named the G.W.R. 4-6-0 locomotive No. 4016 after his regiment. The nameplate of the locomotive, which carried the inscription *The Somerset Light Infantry* (*Prince Albert's*), was draped and covered with flags, including those of the regiment, and as the General pulled the cord parting these, buglers sounded a flourish. Five past members of the regiment from the Royal Hospital, Chelsea, were in attendance dressed in their picturesque full uniform. The Great Western Railway was represented by :—

Viscount Horne, Chairman ; Lord Palmer, Deputy Chairman ; Sir James Milne, General Manager ; Sir Ralph Cope, Chief Accountant ; Mr. F. R. E. Davis, Secretary ; Mr. C. R. Dashwood, Assistant General Manager ; Mr. K. W. C. Grand, Assistant to General Manager ; Mr. G. E. Orton, Commercial Assistant to the Superintendent of the Line ; Mr. C. T. Cox, London Divisional Superintendent ; Mr. J. W.A. Kislingbury, London Divisional Locomotive Superintendent.

After the ceremony the locomotive left Paddington in charge of the 1.30 p.m. express to Somerset and the West Country.

British Industries Fair, Birmingham, 1938.—At the invitation of the management of the British Industries Fair, a party of press representatives was shown the Engineering and Hardware Section at Birmingham on February 18. Mr. Arnold H. Godfrey, Chairman of the Board of Management, announced that all records had been beaten this year, the area of the stands at Castle Bromwich having attained the figure of 304,000 sq. ft., representing a total shop frontage of 12 miles. The aggregate area of the London and Birmingham Fairs amounted to 857,000 sq. ft. Many innovations have been introduced this year, including better amenities and facilities for buyers, a system of coloured lighting to distinguish the various gangways, and improved car-parking accommodation. The British railways have a stand at the fair, which is open daily except Sunday until March 4, at Birmingham from 10 a.m. to 6 p.m., and in London from 9.30 a.m. to 7.30 p.m.

Reconstruction of Stafford Junction, L.M.S.R.—The reconstruction and resignalling of Trent Valley junction (Stafford No. 1 signal box), where the Euston-Crewe and Birmingham-Crewe main lines of the L.M.S.R. converge ½ mile south of Stafford station, has been begun. The first stage of the job, the whole of which will take seven weeks to complete, was carried out last Sunday. The design of the new junction embodies the principles described in the article entitled " High-Speed Junctions," by W. M. Bond, in THE RAILWAY GAZETTE of October 2 and 9, 1936. By the use of two-level chairs cant will be provided, and with the insertion of transition curves and switch diamonds the existing speed restriction of 30 m.p.h. will be raised to 55 m.p.h. About £8,000 will represent the cost of permanent way work and £2,000 that of alterations to the signalling at Stafford to enable the working of the traffic to be carried out with greater efficiency. The maximum slew of the fast lines used by London trains will be 11 ft. 7 in. towards the up side, whilst the Birmingham lines will be slewed to a maximum of 10 ft. The new junction is being laid out at the works of the manufacturers, Taylor Brothers, of Sandiacre. The Stafford scheme represents the execution of two

engineering feats in one, for coincidentally with the new junction work, a large new sewer for the Stafford Corporation is to be laid under the line at the same site. This sewer will cross the line at a depth of 5 ft. below rail level, involving the excavation in sections of a deep trench extending the full width of the railway. The work will be carried out to the requirements of Mr. W. K. Wallace, Chief Engineer of the L.M.S.R., by Mr. R. E. Bullough, District Engineer, Crewe.

Institution of Railway Signal Engineers.—At the annual general meeting in London, on February 23, Mr. G. H. Crook was elected President for the session 1938. An abstract of his inaugural address appears on pages 361-5. Mr. J. Boot was elected Vice-President, and the following members of council by ballot: Messrs. F. H. D. Page, A. Moss, R. F. Morkill, J. H. Fraser, P. Lomas, L. J. M. Knotts, C. H. Hills, H. H. Dyer, F. J. Dutton, H. W. Moore, F. L. Castle, E. W. Hallam, F. Horler, S. W. Spendlove, W. R. Jones, and R. Dell. Mr. M. G. Tweedie was re-elected Honorary Secretary; Mr. T. S. Lascelles Honorary Treasurer; and Messrs. F. Edwards and T. Austin Honorary Auditors. The next meeting will be in London, on March 23, when a paper on "High Speed Trains and their Effect on Signalling," is to be given by Mr. F. B. Egginton.

Edgware Extension—Terminal to be Named Bushey Heath.—To meet the wishes of local authorities and residents, the London Passenger Transport Board has decided to give the name Bushey Heath to the terminus of the extension of the Northern Line from Edgware. It had been proposed to name the station Aldenham, to avoid confusion with the L.M.S.R. station known as Bushey. Sir Dennis Herbert, the Member of Parliament for Watford, made representations to the board emphasising the clear indication that "Bushey Heath" would give as the local name of the district. The other stations on the extension will be named Brockley Hill and Elstree.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 7th Week			Totals to Date		
	1938	1937	Inc. or Dec.	1938	1937	Inc. or Dec.
L.M.S.R. (6,855½ mls.)	£	£	£	£	£	£
Passenger-train traffic	394,000	396,000	− 2,000	2,687,000	2,595,000	+ 92,000
Merchandise, &c.	492,000	494,000	− 2,000	3,369,000	3,309,000	+ 60,000
Coal and coke	310,000	300,000	+ 10,000	2,172,000	2,015,000	+ 157,000
Goods-train traffic	802,000	794,000	+ 8,000	5,541,000	5,324,000	+ 217,000
Total receipts	1,196,000	1,190,000	+ 6,000	8,228,000	7,919,000	+ 309,000
L.N.E.R. (6,315 mls.)						
Passenger-train traffic	254,000	259,000	− 5,000	1,791,000	1,748,000	+ 43,000
Merchandise, &c.	342,000	328,000	+ 14,000	2,327,000	2,238,000	+ 89,000
Coal and coke	285,000	268,000	+ 17,000	1,990,000	1,837,000	+ 153,000
Goods-train traffic	627,000	596,000	+ 31,000	4,317,000	4,075,000	+ 242,000
Total receipts	881,000	855,000	+ 26,000	6,108,000	5,823,000	+ 285,000
G.W.R. (3,737 mls.)						
Passenger-train traffic	161,000	160,000	+ 1,000	1,123,000	1,107,000	+ 16,000
Merchandise, &c.	195,000	194,000	+ 1,000	1,366,000	1,303,000	+ 63,000
Coal and coke	127,000	121,000	+ 6,000	884,000	836,000	+ 48,000
Goods-train traffic	322,000	315,000	+ 7,000	2,250,000	2,139,000	+ 111,000
Total receipts	483,000	475,000	+ 8,000	3,373,000	3,246,000	+ 127,000
S.R. (2,147 mls.)						
Passenger-train traffic	253,000	255,000	− 2,000	1,802,000	1,758,000	+ 44,000
Merchandise, &c.	58,000	59,000	− 1,000	401,000	401,500	− 500
Coal and coke	38,000	39,000	− 1,000	261,000	249,500	+ 11,500
Goods-train traffic	96,000	98,000	− 2,000	662,000	651,000	+ 11,000
Total receipts	349,000	353,000	− 4,000	2,464,000	2,409,000	+ 55,000
Liverpool Overhead (6¼ mls.)	1,276	1,228	+ 48	9,554	8,337	+ 1,217
Mersey (4½ mls.)	4,313	4,210	+ 103	30,756	29,555	+ 1,201
*London Passenger Transport Board	537,300	561,200	− 23,900	19,066,100	19,000,600	+ 65,500
IRELAND						
Belfast & C.D. (80 mls.) pass.	1,608	1,576	+ 32	11,799	11,409	+ 390
,, ,, goods	458	543	− 85	2,952	3,125	− 173
,, ,, total	2,066	2,119	− 53	14,751	14,534	+ 217
Great Northern (543 mls.) pass.	8,200	6,950	+ 1,250	56,000	50,950	+ 5,050
,, ,, goods	8,350	9,250	− 900	56,750	59,800	− 3,050
,, ,, total	16,550	16,200	+ 350	112,750	110,750	+ 2,000
Great Southern (2,076 mls.) pass.	26,383	26,132	+ 251	192,870	183,865	+ 9,005
,, ,, goods	37,768	40,463	− 2,695	285,002	294,574	− 9,572
,, ,, total	64,151	66,595	− 2,444	477,872	478,439	− 567

* 34th week (before pooling)

British and Irish Railway Stocks and Shares

Stocks	Highest 1937	Lowest 1937	Prices Feb. 23, 1938	Prices Rise/Fall
G.W.R.				
Cons. Ord.	67⅜	55¾	58¼*	−1¾
5% Con. Prefce.	127	108	115½*	−2
5% Red.Pref.(1950)	113	109	108½*	−2
4% Deb.	113⅝	102½	108½	−½
4½% Deb.	118	106	110½	—
4½% Deb.	124½	112	117½	—
5% Deb.	136½	122¾	129½	—
2½% Deb.	76	64	68½	—
5% Rt. Charge	133 7/16	118	127½	+1
5% Cons. Guar.	133¾	116½	125½*	−2
L.M.S.R.				
Ord.	36⅛	25⅝	22¼*	+½
4% Prefce. (1923)	82½	65¾	62*	−½
4% Prefce.	92½	77¾	78½*	−1½
5% Red.Pref.(1955)	107¾	102	103	—
4% Deb.	108	99¼	102	−½
5% Red.Deb.(1952)	117½	111	113½	—
4% Guar.	104	95⅞	100*	−1½
L.N.E.R.				
5% Pref. Ord.	12½	6¾	7	+½
Def. Ord.	6¼	3⅝	3⅜	+⅛
4% First Prefce.	79½	63	62*	−1
4% Second Prefce.	31½	21	23*	+1
5% Red.Pref.(1955)	101¼	89¾	94½*	−2
4% First Guar.	103	91⅞	95	—
4% Second Guar.	97⅝	85½	87½	−½
3% Deb.	84⅛	74	76	−½
4% Deb.	107¼	98½	101	−½
5% Red.Deb.(1947)	113½	106½	110½	—
4½% Sinking Fund Red. Deb.	110 3/16	105½	107	—
SOUTHERN				
Pref. Ord.	98⅝	83½	79*	−3
Def. Ord.	27⅞	16¾	20¼*	−¼
5% Pref.	126 1/16	105 13/16	113½*	−1
5% Red.Pref.(1964)	118	110¼	113½*	−1
5% Guar. Prefce.	133¾	116¾	125*	−2
5% Red.Guar.Pref. (1957)	118½	111½	114*	−2
4% Deb.	112	101¼	106	−½
5% Deb.	135¾	123½	127½	—
4% Red. Deb. 1962–67	113	105	106½	—
BELFAST & C.D.				
Ord.	5	4	4½	—
FORTH BRIDGE				
4% Deb.	106	99½	100½	—
4% Guar.	105¾	99	100½	—
G. NORTHERN (IRELAND)				
Ord.	11	5	5½	+¼
G. SOUTHERN (IRELAND)				
Ord.	50	21½	23	—
Prefce.	61	34	33½	—
Guar.	94¾	69½	70¼	—
Deb.	95	82⅛	83	—
L.P.T.B.				
4½% "A"	123¾	110½	118½	—
5% "A"	135	121½	128½	—
4½% "T.F.A."	108¾	104	106	—
5% "B"	125	114½	121½	—
"C"	99¾	75	82*	−1
MERSEY				
Ord.	42⅝	22	23	—
4% Perp. Deb.	103	96¾	100	—
3% Perp. Deb.	77⅝	74½	74½	—
3% Perp. Prefce.	68¾	61¼	63½	—

* ex. dividend

XUM

CONTRACTS AND TENDERS

W. & C. French Limited has received a contract, in connection with the scheme of improvements and extensions adopted by the Standing Joint Committee of London Transport and the main-line railways, for widening the L.N.E.R. line between East Finchley and Finchley (Church End). The work to be carried out under this contract is of a value exceeding £68,000 and is part of the £40,000,000 programme approved in 1935. The widening is a necessary preliminary to electrification in readiness for tube services from the Northern tube and it is expected that the work will be completed within the next year.

J. H. Holmes & Co. Ltd. has received an order from the Central Argentine Railway for one two-operator portable welding set.

E. & W. Lucas Limited has received an order from the Egyptian State Railways Administration for shovels, (Ref. No. E.S.R.10.155, total price approx. £222, delivery f.o.b. Liverpool).

The Skoda Works Limited has received an order from the Egyptian State Railways Administration for axles (Ref. No. E.S.R.21.764, total cost approx. £400, delivery f.o.b. Hamburg or Trieste).

P. & W. MacLellan Limited has received an order from the Egyptian State Railways Administration for mild steel bars (Order No. 1.400 of November 23, 1937, total cost approx. £452, delivered Port Glasgow).

Taylor Bros. & Co. Ltd. has received an order from the Buenos Ayres Great Southern Railway for 768 steel locomotive, carriage, and wagon tyres.

Leyland Motors Limited has received orders from the Thames Valley Traction Co. Ltd. for 10 oil-engined and from W. Alexander & Sons for one oil-engined Tiger passenger vehicles.

Jessop & Co. Ltd. has received an order from the Indian Stores Department for two No. 8 Morgan's tilting furnaces, type CA, for oil fuel.

Jessop & Co. Ltd. has also received an order from the Indian Stores Department for one electric one-ton walking crane.

John Lang & Sons Limited has received an order from the Buenos Ayres Great Southern Railway for one sliding, surfacing, and screwcutting lathe.

The Barrow Haematite Steel Co. Ltd. has received an order from the Bombay, Baroda & Central India Railway Administration for 30 tons of silico-manganese spring steel required for laminated bearing springs and to be supplied to the inspection of Messrs. Rendel, Palmer & Tritton.

Carters Merchants Limited on behalf of Kupferwerke Bohmen has received an order from the South Indian Railway Administration for 22 flanged and flat copper firebox plates, to be supplied to the inspection of Messrs. Robert White & Partners.

The Chloride Electrical Storage Co. Ltd. has received an order from the Bombay, Baroda & Central India Railway Administration, to the inspection of Messrs. Rendel, Palmer & Tritton, for the supply of 348 lead train lighting accumulators.

Bochumer Verein A.G. has received an order from the Bombay, Baroda & Central India Railway Administration, to the inspection of Messrs. Rendel, Palmer & Tritton, for 151 locomotive tyres.

Wm. Beardmore & Co. Ltd. has received an order from the Bengal Dooars Railway Administration, to the inspection of Messrs. Rendel, Palmer & Tritton, for 46 locomotive and 60 carriage and wagon tyres.

Alfred Herbert Limited has received an order from the Central Argentine Railway for one Lumsden oscillating tool grinder.

Alfred Herbert Limited has also received an order from the Buenos Ayres Western Railway for one Lumsden motor-driven vertical spindle surface grinder.

Ransomes & Rapier Limited has received an order from Pickfords Limited for one six/10-ton super-mobile petrol-electric crane, incorporating Pickfords modifications. This crane is the first of a new type.

The Crown Agents for the Colonies have recently placed the following orders :—

Bayliss, Jones & Bayliss Limited : Bolts.
Tees Side Bridge & Engineering Works Limited : Brake blocks.
Enfield Cable Works Limited : Cable.
W. T. Henley's Telegraph Works Co. Ltd. : Cable ; copper wire.
Stanton Ironworks Co. Ltd. : Cast iron pipes.
Dorman, Long & Co. Ltd. : Cast iron ; corrugated sheets ; mild steel plates.
Holman Bros. Ltd. : Compressed air plant.
Eyre Smelting Co. Ltd. : Copper ingots.
Guest, Keen & Nettlefolds Limited : Dog-spikes ; nuts.
British Thomson-Houston Co. Ltd. : Electric motors.
Stewarts and Lloyds Limited : Galvanised pipes and fittings ; galvanised steel tubes.
Norris, Henty & Gardners Limited : Gardner diesel engines.
Monk Bridge Iron & Steel Co. Ltd. : Locomotive axles and tyres.
Kitson & Co. Ltd. : Locomotive boilers.
Howell & Co. Ltd. : Locomotive steel tubes.
Phosphor Bronze Co. Ltd. : Metal.
United Steel Companies Limited : Mild steel bars.
Vacuum Oil Co. Ltd. : Oil.

It is announced that the Roumanian-Bulgarian train-ferry commission has decided, subject to approval from both Governments, to place an order with the Maschinenfabrik Augsburg-Nürnberg (M.A.N.) for the construction of the required ferry equipment for the service between Dschurdschu and Rustschuk, at a price of about 140 million lei, half to the charge of each Government. The order is to be completed in 17 months, and the ferry service to begin in the summer of 1939. It is stated that the agreement to provide this service became possible only after Bulgaria withdrew opposition to the Roumania-Greece air services flying over its territory.

Craven Bros. (Manchester) Limited has received an order from the Indian Stores Department for one Summerskill motor-driven planing machine and one Wadkin circular saw bench.

The Associated British Machine Tool Makers Limited has received an order from the Indian Stores Department for one Fairbank-Brearley two-eye rolling machine for spring plates.

Tenders are invited by the Egyptian State Railways Administration, receivable at the General Management, Cairo, by March 10, for the supply of five 36-in. surfacing and boring lathes, complete with electric motors and starters.

Tenders are invited by the Egyptian State Railways Administration, receivable at the General Management, Cairo, by March 31, for the supply of 223 engine and tender tyres.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department, New Delhi, receivable by March 10, for the supply of steel boiler and flue tubes.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department (Miscellaneous Section), New Delhi, receivable by March 21, for the supply of roofing materials with accessories for railway carriages, required during the period August 16, 1938, to August 15, 1939.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department (Engineering Section), New Delhi, receivable by March 23, for the supply of two self-contained 60-ton capacity railway wagon weighbridges.

Tenders are invited by the Controller of Purchase, Indian Stores Department, 6, Esplanade East, Calcutta, receivable by March 14, for the supply of 25 tons of French wire nails required for the East Indian and Eastern Bengal Railways.

Tenders are invited by the Swedish State Railways Administration, receivable in Stockholm, by March 5, for the supply, alternatively, states Reuters, of 325,000 or 192,000 tons of coal.

Tenders are invited, receivable at the office of the Controller of Stores, North Western Railway, Lahore, by March 17, for the supply of 180 drawbars and 110 pressed steel cradles for drawbars.

Tenders are invited, receivable at the office of the Controller of Stores, North Western Railway, Lahore, by March 16, for the supply of 140 locomotive cross-heads.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department (Engineering Section), New Delhi, receivable by March 9, for the supply of buffer, draw-hook, bogie check, radial truck control and safety-valve springs.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department (Engineering Section), New Delhi, receivable by March 16, for the supply of 150 pairs of wheels and axles for 5 ft 6 in.-gauge N.W.R. trolleys.

OFFICIAL NOTICES

Universal Directory of Railway Officials and Railway Year Book

43rd Annual Edition, 1937-38

This unique publication gives the names of all the principal railway officers throughout the world, together with essential particulars of the systems with which they are connected. Much general and statistical information about railways is also concisely presented.

Price 20/- net.

THE DIRECTORY PUBLISHING CO. LTD.
33, Tothill Street, Westminster, S.W.1.

OFFICIAL ADVERTISEMENTS

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to :—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

London Midland & Scottish Railway Company

NOTICE IS HEREBY GIVEN that the next Ordinary General Meeting of the London Midland & Scottish Railway Company will be held at Friends' House, Euston Road, London, N.W., on Thursday, the 10th March, 1938, at 11.30 a.m. precisely, for the transaction of the general business of the Company.

JOSIAH CHARLES STAMP,
Chairman.
OWEN GLYNNE ROBERTS,
Secretary.

Euston Station,
London, N.W.1.
23rd February, 1938.

S.R. Locomotive Running Department Dinner

The annual dinner of the Eastern Divisional Locomotive Running Department, Southern Railway, was held on February 23, at the Strand Palace Hotel, London, with Mr. D. Sheppy, Eastern Divisional Locomotive Running Superintendent, in the chair. Among those present were :—

Messrs. Bell, Bishop, Challis, Cobb, Clayton, Chrimes, England, Hall, Hare-Dean, Hill, Holcroft, Livesey, Marsh, Moore, MacLeod, Masterton, Nunn, Wheeler, Wynne-Davies, and Willox.

As a tribute to the late Locomotive Running Superintendent of the Southern Railway, Mr. A. D. Jones, whose death had occurred since the last dinner, the whole company stood in silence for a short time. After the loyal toast, Mr. Sheppy presented a pair of love birds to Mr. Moore, his colleague in charge of the Western Division of the Locomotive Running Department, and a sword and scabbard to Inspector Turner.

Mr. W. J. England, Assistant Superintendent of Operation, proposed the toast of "The Locomotive Running Department," and paid a tribute to the late Mr. A. D. Jones and his successor, Mr. A. Cobb, with both of whom it was a pleasure to co-operate. No matter what problems the Traffic Department set to the Locomotive Running Department, they were duly solved. For example, on the Saturday before last August bank holiday, no fewer than 67 boat trains had to be run between London and the channel ports, yet this heavy tax, in addition to that imposed by the home special holiday traffic, was successfully met. Although electrification had spread and was spreading, the day of the steam locomotive was not done and 50,000,000 locomotive miles had been run last year. Mr. England referred to the relation of the Southern's Sales scheme to the Locomotive Running Department. It, together with the Operating Department, working behind the scenes, was responsible for providing the saleable service required. An indication of the steady improvement of that service was shown by the return of engines recovering lost time, and the mounting figures recorded in that return alone formed a tribute to Mr. Cobb, with whose name the toast was coupled and to whom musical honours were accorded. Mr. A. Cobb, Locomotive Running Superintendent, responding to the toast, mentioned that most of the work of his and the Operating Departments seemed to be concerned with attending to things that went wrong, and their pre-occupation in that direction was apt to make them forget the importance of the work that did not go wrong. With the increasing traffic they had to handle it was perhaps remarkable that such a high proportion worked smoothly and without a hitch. Since the last dinner, they had lost their Chief Mechanical Engineer, Mr. Maunsell, but in his successor, Mr. Bulleid, they had acquired a new chief who displayed a special interest in locomotive running. Mr. Bulleid's attention to this matter demanded a high standard of locomotive maintenance, and his insistence upon punctuality threw a responsibility on the Locomotive Running Department which they were glad to shoulder. Mr. Cobb referred to the increased cleanliness of locomotives, an attribute appreciated by the public, the enginemen, and the fitters, and one which improved morale all round. He expressed the hope that this higher standard would be maintained throughout the coming year, despite the prospect of even heavier traffic than before.

Mr. W. Marsh, Assistant for General Purposes to the Chief Mechanical Engineer, briefly proposed the toast of "The Chairman," to which Mr. Sheppy responded.

STAFF AND LABOUR MATTERS

Shipbuilding and Ship-repairing Wages

At a meeting of the Confederation of Engineering and Shipbuilding Trades Unions, held in York on February 16, improvements in wages and conditions of shipyard workers were announced. Under the agreement wages of adult workers in the shipbuilding and ship-repairing industry are to be increased by 2s. a week in the case of ordinary time-workers and by 4 per cent. in the case of piece-workers. In future, wages of apprentices, and of boys and youths under 21 years of age, will fluctuate with national fluctuations in wages of adult employees. Under this arrangement boys and youths will this week receive an advance amounting to 1s. if eighteen years of age and over, or sixpence if below that age. In the case of time-working apprentices the advance will be sixpence in the earlier years and 1s. in the last three years of the apprenticeship. Pieceworking apprentices will receive an advance of 4 per cent. on their earnings. The agreement will not apply to indentured apprentices, but the employers have undertaken that they will not be treated less favourably. With regard to holidays with pay the agreement provides that every employee whose wages follow the fluctuations in the industry, whether time-worker or piece-worker, shall from the beginning of the first full pay week in February be credited in respect of each pay week with an amount equal to one-fiftieth of the plain time rate of his class, inclusive of bonus, for hours actually worked in that week, subject to a maximum credit in any pay week of one-fiftieth of his plain time rate, including bonus, for a full working week of 47 hours. The sum of the amounts so credited to each employee throughout the year shall be payable at the recognised or agreed summer holiday period. Any variation of the agreement shall be subject to the procedure which would apply to a general wages fluctuation.

POWER SIGNALLING AT ZURICH STATION.—The route indicators at Zurich station, described in our issue of February 4, were supplied by Signum A.G. Wallisellen, Zurich, and not by Gfeller A.G., of Berne. The latter firm supplied the brake testing and train departure signals and the intercommunication between shunters and signal box. The manual block apparatus seen in the illustration on page 218 has, we are informed, now been replaced by automatic apparatus.

XUM

Railway Share Market

Hopes that the international political position is improving induced a much better tendency in the stock and share markets this week. Prices in all sections have shown a partial, although all-round, improvement from the sharp reaction in evidence last week.

Home railway stocks benefited from the better market tendency, but did not keep best prices as sentiment was affected by the disappointing traffic figures for the past week. Great Western was inclined to respond to the statements at the meeting and to attention drawn to the apparently attractive yield offered at the current price of around 58¼. Apart from the reference to the company's electrification plans, interest attached to the statement at the meeting that increased freight and passenger rates should yield sufficient additional revenue to meet the higher costs, particularly as the company has contracts for supplies at lower prices than rule today. The market is assuming that there are reasonable possibilities of the 4 per cent. dividend being maintained, so long as there is no major set-back in trade conditions.

L.N.E.R. second preference has been more active up to 24 since the announcement of the raising of the dividend to 1¾ per cent. The latter was above most market estimates, and it is apparent the railway was able last year to retain a considerably larger proportion of its gross receipts than was generally expected. The 4 per cent. first preference stock was dull at 62, although the yield appears excessive, bearing in mind that there seems every reason to believe the full 4 per cent. dividend will continue to be forthcoming on this stock. L.M.S.R. ordinary, which was 21¾ at one time, subsequently improved to 22½, at which a yield of around 6⅝ per cent. is offered. The meeting continues to be awaited with interest, as it is hoped in the market that in the case of the L.M.S.R. there is unlikely to be any further substantial increase in expenses this year. Southern deferred has gone back to 20¼, while the preferred, at around 79, "ex" the final dividend, would appear to give an unduly generous yield as the full 5 per cent. dividend should, of course, continue to be paid. London Transport "C" was active, with business around 83¼, sentiment continuing to benefit from anticipations of a total dividend of 5½ per cent. for the current year.

Argentine railway securities were better in sympathy with the improved general trend of markets. The tendency was for chief interest to centre on the ordinary and debenture stocks, particularly in the case of the B.A. Great Southern and B.A. Western. San Paulo showed partial recovery from the recent decline. Canadian Pacific fluctuated fractionally.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1937–38	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1937	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1937	Prices: Lowest 1937	Prices: Feb. 23, 1938	Yield% (See Note)
South & Central America	Antofagasta (Chili) & Bolivia	834	20.2.38	£ 20,370	+ £ 3,350	8	£ 124,110	£ 113,600	+ £ 10,510	Ord. Stk.	29	10¼	12	Nil
	Argentine North Eastern	753	19.2.38	8,455	+ 1,067	34	317,781	300,687	+ 17,094	,,	19¼	6	4½	Nil
	Argentine Transandine	—	—	—	—	—	—	—	—	A. Deb.	93½	60	80	5
	Bolivar	174	Jan., 1938	3,600	− 1,800	5	3,600	5,400	− 1,800	6 p.c. Deb.	9½	5	8½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	17	9	8½	57/8
	Buenos Ayres & Pacific	2,806	19.2.38	112,221	− 10,174	34	2,847,274	2,911,891	− 64,617	Ord. Stk.	17⅛	5½	5	Nil
	Buenos Ayres Central	190	5.2.38	$112,300	− $47,500	32	$3,933,200	$4,589,000	− $655,800	Mt. Deb.	41½	18	11½	Nil
	Buenos Ayres Gt. Southern	5,084	19.2.38	208,871	− 19,851	34	4,894,664	4,751,321	+ 143,343	Ord. Stk.	33¾	13½	13	Nil
	Buenos Ayres Western	1,930	19.2.38	47,767	− 8,499	34	1,552,606	1,605,785	− 53,179	,,	31¾	11¼	9½	Nil
	Central Argentine	3,700	19.2.38	115,779	− 63,436	34	4,255,396	5,049,075	− 793,679	,,	34¼	10¾	9½	Nil
	Do.	—	—	—	—	—	—	—	—	Did.	20½	4½	5½	Nil
	Cent. Uruguay of M. Video	980	12.2.38	22,126	+ 3,493	33	574,727	569,718	+ 5,009	Ord. Stk.	67/32	2	2½	Nil
	Cordoba Central	1,218	—	—	—	—	—	—	—	Ord. Inc.	6¼	1½	1½	Nil
	Costa Rica	188	Dec., 1937	31,844	+ 12,491	25	155,206	110,934	+ 44,272	Stk.	38	27	26½	79/16
	Dorada	70	Jan., 1938	17,700	+ 2,400	5	17,700	15,300	+ 2,400	1 Mt. Db.	107	106	106	55/8
	Entre Rios	810	19.2.38	15,422	+ 3,487	34	493,073	446,995	+ 46,078	Ord. Stk.	19 7/16	6	5	Nil
	Great Western of Brazil	1,092	19.2.38	8,500	− 200	8	68,900	69,600	− 700	Ord. Sh.	¾	1/8	1/4	Nil
	International of Cl. Amer.	794	Nov., 1937	$509,126	+ $82,245	48	$5,379,250	$4,650,651	+ $728,599	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	2/-	1/-	1/5	Nil
	La Guaira & Caracas	22½	Jan., 1938	4,610	− 1,660	5	4,610	6,270	− 1,660	Stk.	8½	6	8½	Nil
	Leopoldina	1,918	19.2.38	18,676	− 4,262	8	139,347	157,344	− 17,997	Ord. Stk.	9¼	3	3	Nil
	Mexican	483	14.2.38	$322,700	+ $35,900	7	$1,921,000	$1,910,000	+ $11,000	,,	1½	1/4	1/8	Nil
	Midland of Uruguay	319	Jan., 1938	12,586	+ 1,824	31	65,059	60,985	+ 4,074	,,	1⅞	1/2	1/2	Nil
	Nitrate	384	15.2.38	8,318	− 437	7	24,747	20,830	+ 3,917	Ord. Sh.	3 1/16	2	2 3/16	Nil
	Paraguay Central	274	19.2.38	$2,433,000	− $208,000	34	$105,774,000	$89,925,000	+ $15,849,000	Pr. Li. Stk.	84	79¼	76½	7 15/16
	Peruvian Corporation	1,059	Jan., 1938	83,749	+ 3,948	31	$87,785	$70,583	+ 17,199	Pref.	14⅝	4½	5	Nil
	Salvador	100	12.2.38	¢39,750	− ¢4,000	33	¢620,875	¢642,508	− ¢21,633	Pr. Li. Db	23½	21½	22½	Nil
	San Paulo	153½	13.2.38	36,493	+ 11,771	7	199,086	186,274	+ 12,812	Ord. Stk.	98½	56	47½	10½
	Taltal	160	Jan., 1938	6,295	+ 2,705	31	28,830	24,490	+ 4,340	Ord. Sh.	1 1/16	11/16	3/4	13 5/16
	United of Havana	1,353	19.2.38	53,672	+ 860	34	682,744	669,277	+ 13,467	Ord. Stk.	5⅝	3 1/32	3	Nil
	Uruguay Northern	73	Jan., 1938	1,072	+ 20	31	6,372	7,616	− 1,244	Deb. Stk.	10	2	2	Nil
Canada	Canadian National	23,803	14.2.38	643,094	− 37,686	7	3,959,198	4,164,272	− 205,074	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	—	4 p.c. Perp. Dbs.	77	62½	70½	5 11/16
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	101⅞	94½	100	4
	Canadian Pacific	17,186	14.2.38	456,800	− 600	7	2,983,400	2,977,600	+ 5,800	Ord. Stk.	18	7¼	7	Nil
India†	Assam Bengal	1,329	31.1.38	47,535	+ 93	45	1,156,500	1,118,193	+ 38,307	Ord. Stk.	86	73½	81	3 11/16
	Barsi Light	202	31.1.38	4,342	+ 1,485	45	114,712	96,037	+ 18,675	Ord. Sh.	66½	46	57	8¾
	Bengal & North Western	2,107	31.1.38	87,747	− 2,876	18	927,161	953,602	− 26,441	Ord. Stk.	317	301	304	5 15/16
	Bengal Dooars & Extension	161	31.1.38	4,515	+ 967	45	124,430	111,495	+ 12,935	,,	100	84	89½	6 11/16
	Bengal-Nagpur	3,268	31.1.38	225,450	+ 23,163	45	5,787,565	5,050,226	+ 737,339	,,	101	89	91½	4⅝
	Bombay, Baroda & Cl. India	3,072	10.2.38	26,175	− 39,075	47	7,603,200	7,545,150	+ 58,050	,,	113	110½	111½	5⅜
	Madras & Southern Mahratta	2,937	31.1.38	161,775	− 5,757	45	4,573,504	4,616,385	− 42,881	,,	110	105	107½	7 15/16
	Rohilkund & Kumaon	571	31.1.38	18,902	− 2,078	18	171,193	181,115	− 9,922	,,	314	302	309	5 15/16
	South Indian	2,531¼	31.1.38	130,385	+ 7,147	45	3,504,759	3,357,583	+ 147,176	,,	103½	99½	100½	4¾
Various	Beira-Umtali	204	Dec., 1937	90,397	+ 21,605	13	276,730	206,068	+ 70,662	—	—	—	—	—
	Egyptian Delta	620	20.1.38	7,382	− 155	43	216,317	206,078	+ 10,239	Prf. Sh.	31/-	3/4	1¼	Nil
	Kenya & Uganda	1,625	Jan., 1938	273,554	− 20,685	5	273,554	294,239	− 20,685	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	48⅛	43½	47½	8 11/16
	Midland of W. Australia	277	Dec., 1937	15,204	+ 401	28	84,334	82,054	+ 2,280	Inc. Deb.	98	93½	93½	4¼
	Nigerian	1,900	8.1.38	73,312	− 2,654	41	2,189,006	1,810,231	+ 378,775	—	—	—	—	—
	Rhodesia	2,451	Dec., 1937	£21,643	+ £72,205	13	1,317,239	1,038,328	+ 278,911	—	—	—	—	—
	South Africa	13,263	29.1.38	625,863	+ 11,937	44	28,107,209	26,613,223	+ 1,493,986	—	—	—	—	—
	Victoria	4,774	Sept., 1937	723,443	− 66,871	13	—	—	—	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements are based on the current rates of exchange and not on the par value.